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VOL. X
TECH. OPNS. IN THE
SOUTH LUFTWAFFE SIS

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THE SIGNAL INTELLIGENCE SERVICE
OF THE
GERMAN LUFTWAFFE

VOL. X

TECHNICAL OPERATIONS IN THE SOUTH

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VOL. X

TECHNICAL OPERATIONS IN THE SOUTH

LUFTWAFFE SIS

F O R E W O R D

Of all the volumes comprising the history, and treating of the operations of the Luftwaffe Signal Intelligence Service, preparation of this volume presented the editors far and away the greatest problem. This was due not only to the great bulk of material compiled and presented by the authors, former members of the Luftwaffe SIS, South, much of it being poorly arranged and all evoked from memory, but also because of the great complex of headquarters, units and activities that characterized the operations of the Allied air forces in the Mediterranean. Selection, revision, arrangement and translation of this material, out of which labor the within volume grew, presented a formidable task.

Insofar as signal security and radio discipline were concerned, the Allied air forces in the Mediterranean proved in many ways superior to those of the West. Again the extended period of active warfare in the South resulted in the rapid evolution of Allied aerial tactics and techniques, many of which were subsequently adopted in the West. These factors presented particular problems to the Luftwaffe SIS of the South, which problems were further aggravated by the great number of headquarters and units, that, especially up to the year 1944, rapidly changed their organizational complexion.

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How well the Luftwaffe SIS coped with these burdensome details, evolving out of the maze a precise picture of the order of battle and operations of the Allied air forces, the within volume presents it is believed. In perusing the study, the reader is cautioned to remember that the authors had no access to any significant knowledge of the Allied air forces other than that derived from signal intelligence.

J.G. SEABOURNE
Colonel, Air Corps,
SIS, USAAF.

*Paragraphs marked with a
Red asterisk have been
downgraded to "Secret"
On 1st Ind dated 9 June 1950 to
the Jc USAFSS, filed in
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TECHNICAL OPERATIONS IN THE SOUTH

LUFTWAFFE SIS

By

Lieut. Guenter Lier
Lieut. Karl Majer
Lieut. Heinz Schultz
Tech.Sgt. Gert Schlottmann

(All of the 352nd Regiment, South, Luftwaffe SIS)

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A. Introduction.

In contrast to the West, where, from the very beginning, the Allies boasted strong, well-organized air forces, the war in the Mediterranean was begun by Great Britain much as a colonial-type military enterprise. Only in 1942, when the South gradually became a focal point of the war, was the growth of the RAF rapidly and effectively accelerated; and thus in the Mediterranean theatre also, the enemy air forces assumed real military significance. The special incentive for this reinforcement on the part of the RAF was the increasing German activity in the Mediterranean, and the threat to vital Allied interests occasioned by the Luftwaffe's supremacy.

When American forces entered the Mediterranean in late 1942, and the role henceforth to be played by American materiel became apparent, German opportunities for resuming the offensive in this theatre virtually disappeared. After the landing in North Africa, the Americans rapidly expanded their aerial power to the point where they, rather than the RAF, were the force to be reckoned with. The U.S. Strategic Air Force was pre-eminently responsible for the

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eventual collapse of the Balkan countries, thereby contributing in no small measure to final Allied victory.

As early as 1942, the Luftwaffe Signal Intelligence Service had made ready two battalions for use in this theatre: one to monitor the western Mediterranean from Italy; the other to guard the east from positions in the Balkans. In the last months of the war these two battalions were combined into a single SIS regiment. The Luftwaffe SIS in the South was superior to that of the West in the following:

- a) Cryptanalytic results. By the fact that it succeeded, especially in the first years of the war, in breaking the most frequently used cryptographic systems, it was possible to read the bulk of messages intercepted. This afforded a much more exact and thorough insight into the enemy's organization than was the case in the West, where evaluation was limited to traffic and log analysis.
- b) The enemy's extensive use of radio communication. This was occasioned both by the geographical extent of the Mediterranean theatre, and an insufficiency of wire communication facilities.

The SIS in the South was at a disadvantage compared to that in the West in the following respects:

- a) The susceptibility of its signal communication system to interference from enemy jamming, and vulnerability to disruption by partisan activity.
- b) Deficiencies in supply of radio equipment.
- c) The far-flung dimensions of the theatre of operations, resulting in the isolation of many of its out-stations, and consequent subjection to the danger of partisan assaults.

B. Top Organization of the Allied Air Forces (See Figure No. 1, End of Vol.).

Until the end of 1942, the highest British air command in the Mediterranean was HQ. RAF, Middle East, in Cairo. Individual combat groups were assigned to this headquarters, but were allowed to operate in a very independent fashion. A more rigid-type organization had not been necessary up to this time, since the war in this theatre had not yet reached its full intensity.

The landing of the Allies in North Africa brought decisive changes in organization. Accompanying the landing force was the headquarters of the Northwest African Allied Air Forces (NAAF), which thereupon installed itself in Algiers, later in Constantine, and subsequently in Tunis. Its final location was at Caserta, near Naples, where its name was changed to the Mediterranean Allied Air Forces (MAAF). Thus the high-level organization of the enemy air forces, for the contest looking to mastery of the Mediterranean, may be summarized as follows:

1. Until the end of 1942, the organization (RAF) was:
 - a) AHQ Gibraltar, and AHQ Malta, for the western Mediterranean.
 - b) AHQ Middle East, as the highest headquarters in the eastern Mediterranean.
 - c) AHQ Iraq-Iran, and HQ. RAF Aden, for the defense of the Near East.

2. From 1943 on, there were combined under HQ. MAAF (previously NAAF):
 - a) The Mediterranean Allied Tactical Air Force (MATAF), for the support of the ground forces.
 - b) The Mediterranean Allied Strategic Air Force (MASAF).
 - c) The Mediterranean Allied Coastal Air Force (MACAF), for over-water reconnaissance, and coastal defense.

a) HQ. RAF, Middle East, for the eastern Mediterranean.

The SIS was able to follow this development accurately. The key to the situation at first lay in the decoding of 4-figure messages. Later, traffic analysis of the point-to-point networks gave reliable intelligence of the inter-relations and chain of command within the higher echelons of MAAP.

C. Mediterranean Allied Tactical Air Force. (See Figures No. 1, 2, 3 and 4, Figure No. 1 at End of Vol.)

1. General Development.

The necessity of a tactical air force arose out of the requirements of desert warfare. Although the Germans had already developed, before the beginning of the war, Stuka bombers (JU 87), for the support of the ground forces, and had achieved notable success with them in the Polish and French campaigns, the disadvantages of this type of aircraft were proved during the battle of Britain. As early as October, 1940, the JU 87's could no longer be employed over England without strong fighter cover, since, owing to their slow rate of climb, the British fighters could shoot them down without difficulty. Therefore, when the RAF began to reorganize, the British developed the fighter bomber in place of the dive bomber.

The fighter bomber received its test of fire in the Libyan campaign. During the Allied advance from El Alamein toward Tunis, the experiences gained provided the basis for the organization of strong tactical air forces. The prolific use of fighter bombers by the British was made possible by the significant contributions of aircraft from the Americans, which assured the British sufficient numerical superiority as to enable them to divert part of their fighter bombers to ground attack. Thus, in the course of mobile warfare, various

*Route of Advance of Desert Air Force
 and XII Air Support Command -*

1942-1945

Legend

- DAF
- - - XII/ASC (XII TAC)
- XXII TAC
- ▬ 42nd Med Bomber Wing
- ⋯⋯⋯ 57th Med Bomber Wing

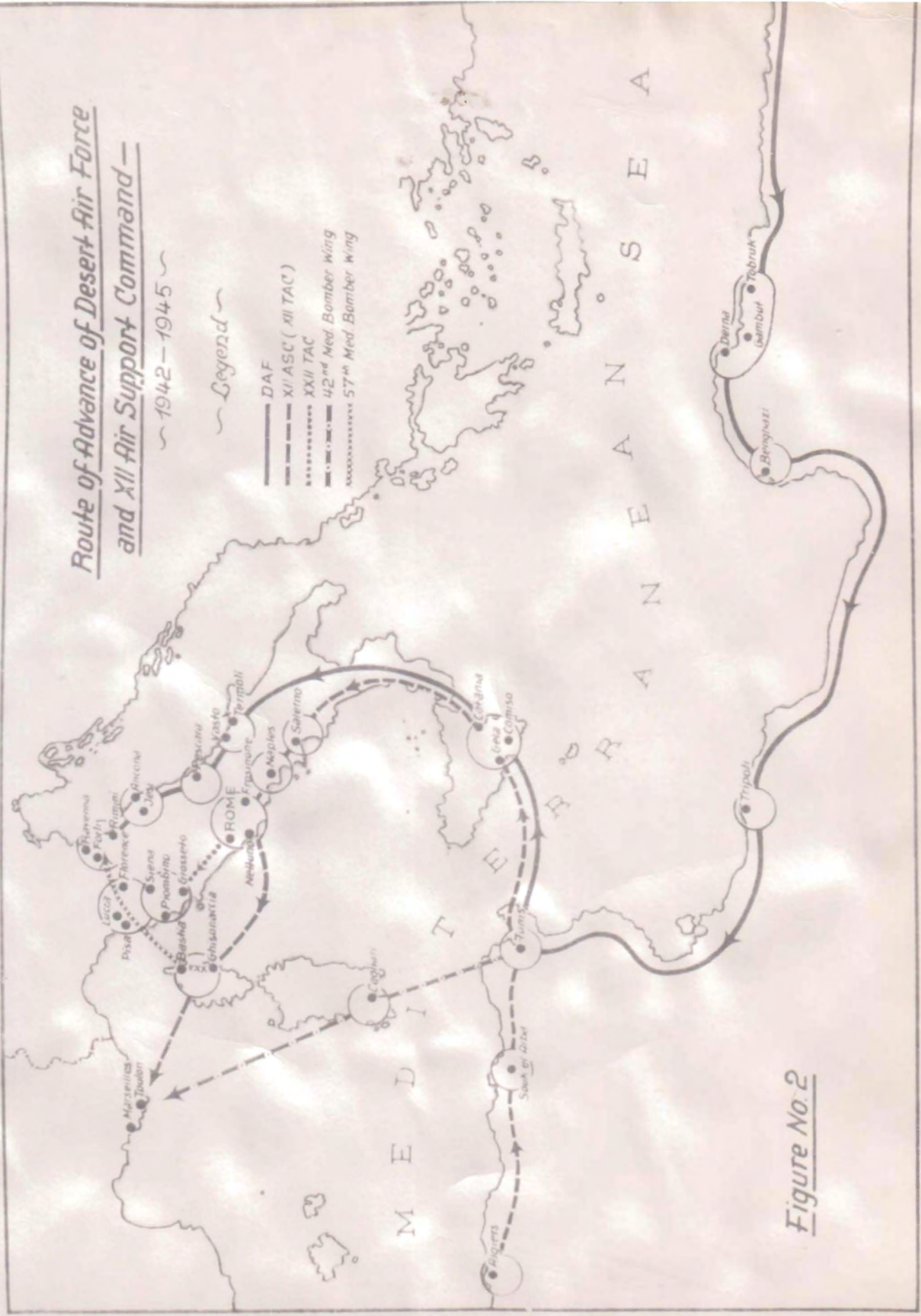
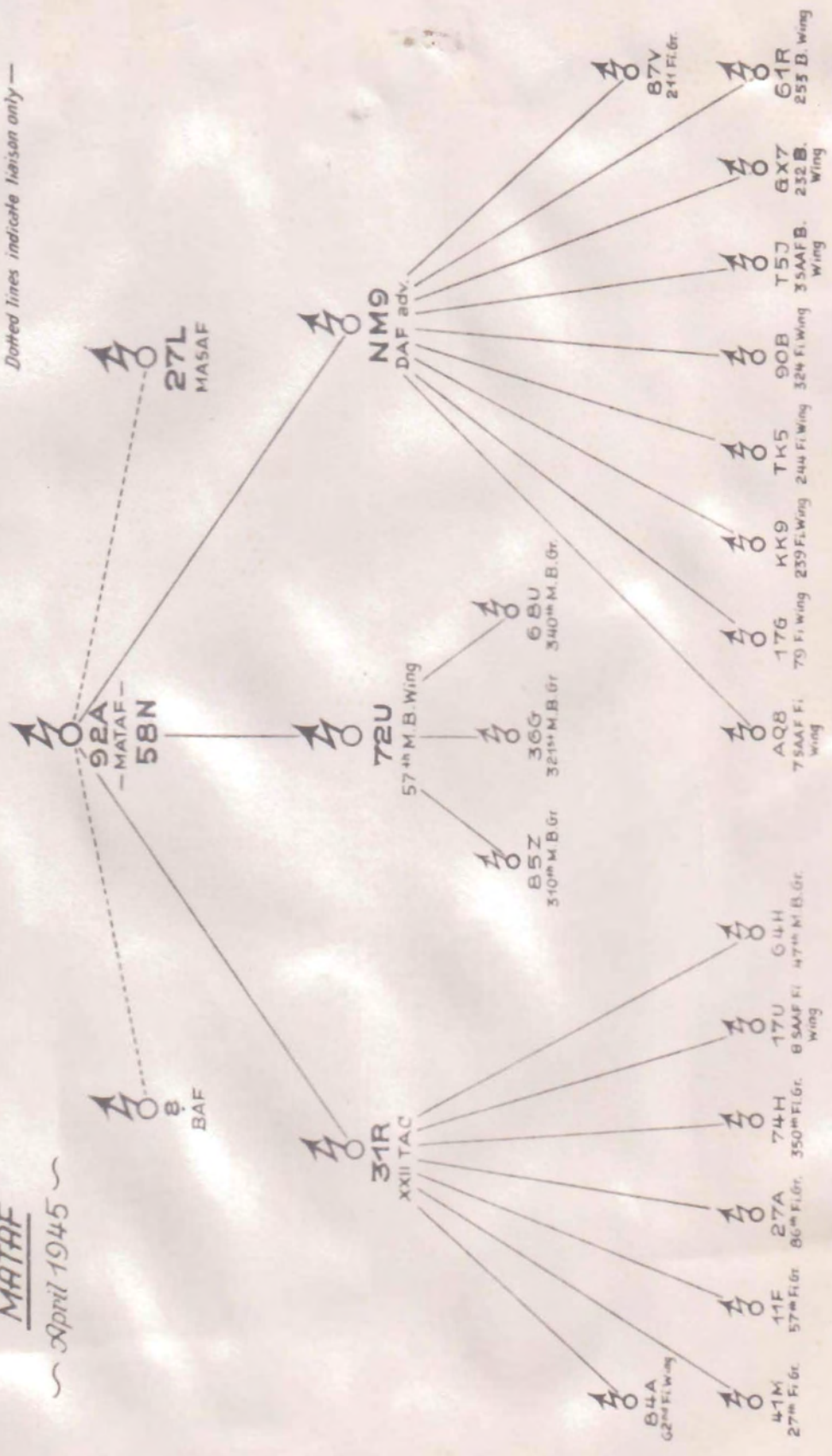


Figure No. 2

Operational Network of
MATAF
~ April 1945 ~

Figure No. 3

Dotted lines indicate liaison only —

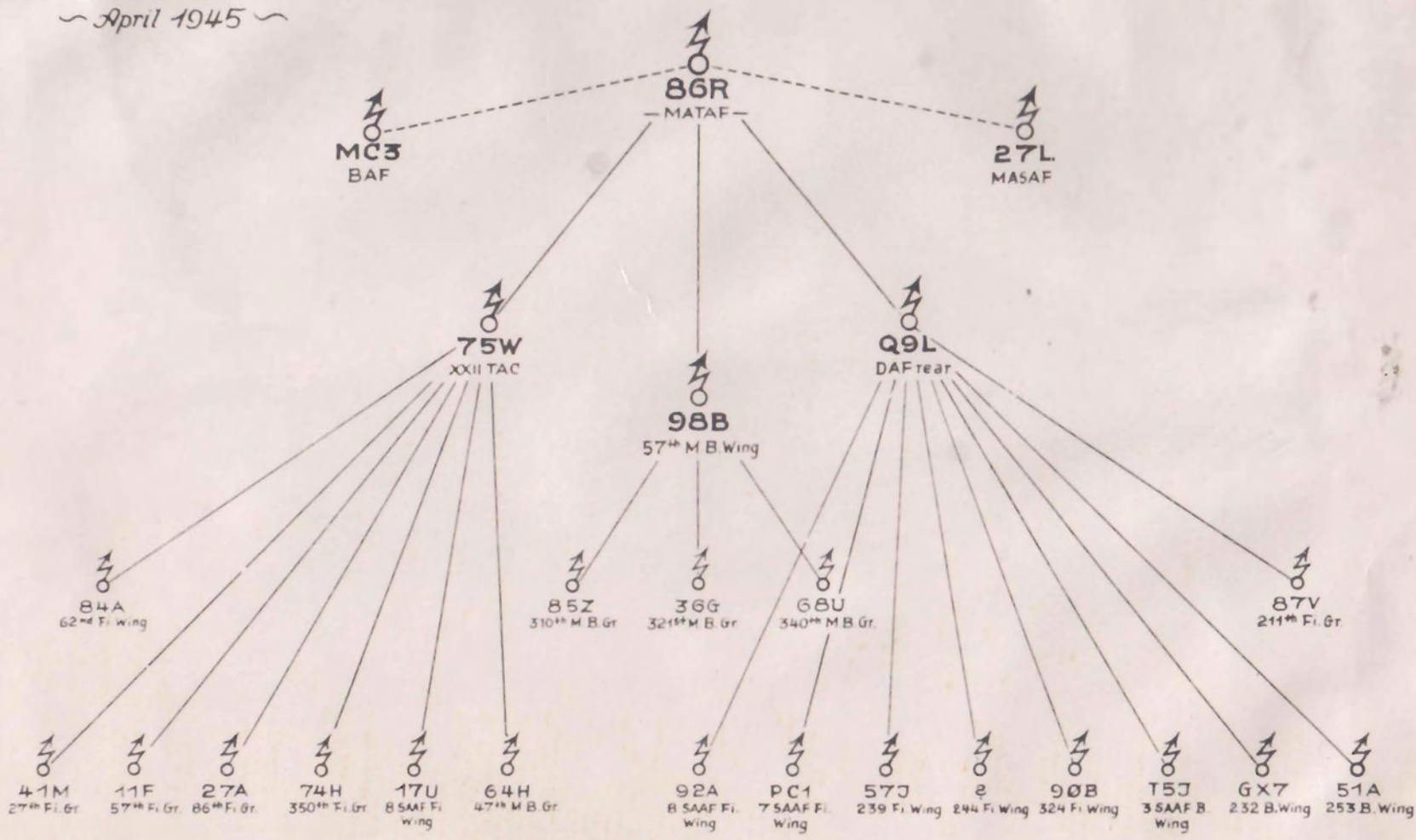


Administrative Network of
MATAF

~ April 1945 ~

Figure No. 4

Dotted lines indicate liaison only —



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methods were developed for the control of fighters attacking ground objectives. Meanwhile the Americans also, after studying the various air support techniques, and with the benefit of British experience, began to develop a tactical air force. This appeared immediately after the landings in North Africa. During the Tunisian campaign, the American II Corps and the British Eighth Army had their own close support units, the XII Air Support Command, and the Desert Air Force, respectively. Both included fighter and medium bomber units whose task it was to support the ground troops in their advances.

After the conclusion of the African campaign, both air support units were included in the newly-created MATAF. Approximately half of these tactical units were withdrawn from the Tunisian front so that the subsequent leap-frog landings on Pantelleria, Sicily, and the Gulf of Eufemia could be prepared for, and supported by freshly-rested aviation.

Only after the conclusion of these preliminary landings, and with the Salerno landings, were the air support units consolidated on the Italian mainland, and again took over their old tasks on the frontal sectors. The single-engine aircraft of DAF (fighters, fighter bombers and reconnaissance aircraft) operated in the area of the British Eighth Army advancing along the east coast of the peninsula, and, during the course of the Italian campaign, moved from the Termoli area via Pescara, Ancona, and Fano to the Rimini-Ravenna-Forli area. Along the western coast, the XII Air Support Command (later the XII Tactical Air Command), followed the American Fifth Army from the Salerno area to Naples, and, via Rome, to the Tuscan plain (Pisa-Pontedera area). (See Figure No. 2).

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In the battles amidst the Apennine passes, where each successive mountain peak marked a new and bitter contest, and where each of the low and narrow valleys had to be penetrated with concentrated forces, it was soon proved that, in order to attain freedom of maneuver, a certain decentralization was necessary. Therefore, a number of new tactical air procedures was developed, of which "Cabrank" acquired a special significance.

The medium bomber units had been temporarily combined into a "Tactical Bomber Force", but were soon assigned again to the two air support commands, with the exception of two American wings which were established on airfields in Sardinia (42nd Medium Bomber Wing) and Corsica (57th Medium Bomber Wing). Their targets consisted of communications systems, troop concentrations, supply dumps, and industrial installations in advance of the front; later, their prime target was the Brenner Pass. They only attacked front-line objectives immediately preceding a large-scale ground offensive.

HQ. MATAF moved to Corsica in the summer of 1944 to supervise the American landing in southern France and had prepared a considerable portion of its units in Italy for this purpose. Meanwhile, HQ. DAF had to support both Armies. It solved this problem by sending part of its units to the western sector of the Front, and itself moved to Venafro on the middle sector, later to Rieti.

After conclusion of the landing operation in southern France, there remained for MATAF the problem of preparing for the drive through the German Gothic line. For this purpose DAF was reinforced by the addition of the 254 Bomber Wing (RAF), and the 683 Recce. Squadron (RAF), and returned to Rimini on the Adriatic Coast. In place of the XII Tactical Air Command, which had remained in France, there appeared in the traffic of the command networks a new

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headquarters, the XXII Tactical Air Command. It had a new Safety Service, and radar reporting organization, and was supplemented by the addition of the 62nd Fighter Wing, the 206 Reconnaissance Squadron (RAF), and the 3 South African Fighter Wing. MATAF Headquarters itself moved to Florence, while the units of XXII TAC concentrated in the Pisa-Florence-Grosseto area. There were also added three night fighter squadrons, whose mission was not to supplement the defensive role of MACAF, but rather to destroy the large motor convoys traveling at night along the supply routes.

After intensive attacks by both the 15th Air Force and MATAF, in advance of the ground forces, the breakthrough into the Po Valley was achieved. The continuous movements of the out-stations of the Luftwaffe SIS Regiment, South, and the increasing difficulties encountered with signal communication, prevented the regimental evaluation section from compiling a complete picture of the air and ground situations in the Po Valley.

2. Organization.

MATAF was organized according to the functions it performed for the ground forces, each Army being given its own tactical air command. MATAF, therefore, had a two-fold mission:

- a) The direct support of the ground forces.
- b) Indirect support through the agency of the Tactical Bomber Force.

Direct support was provided by the single-engine fighters, which always operated in advance of the front lines of each sector, within clearly-prescribed areas. The medium bombers ranged deep into German-held territory, and attacked sensitive points on the line of communications, industrial installations, and

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other special point targets. Each of the tactical air commands, supporting the respective Armies, had two reconnaissance squadrons, which also flew reconnaissance missions for the medium bombers. The order of battle of MATAF, following the Salerno landing, was approximately as follows:

XII Air Support Command

27th Fighter Group

57th Fighter Group

86th Fighter Group

111th Recon. Squadron

324 Fighter Wing (RAF)

Desert Air Force

239 Fighter Wing (RAF)

244 Fighter Wing (RAF)

7 SAAF Fighter Wing

40 SAAF Recce. Squadron

318 Polish Recce. Squadron

Tactical Bomber Force

47th Medium Bomber Group (12th AF)

310th Medium Bomber Group (12th AF)

340th Medium Bomber Group (12th AF)

3 SAAF Bomber Wing

232 Bomber Wing (RAF)

The combining of the medium bombers under a single command apparently did not prove successful, since after a short time the medium bomber units were assigned to the two tactical air commands. The final organization of the tactical air commands, as determined by the Luftwaffe SIS, is shown in Figure No. 1 (at end of volume).

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3. The Individual Units.

a) Desert Air Force.

The DAF comprised those RAF units which had supported the British Eighth Army in Africa from the very beginning, and had therefore been responsible for developing the operational techniques of the tactical air forces. It originally began with the 211 Fighter Group as a nucleus, to which were gradually added medium bomber units, reconnaissance units, and a night fighter squadron. The first air support missions were flown with Hurricanes, which could each carry two 100 lb. bombs. Later, Hurricanes were used in which a 4 centimeter cannon was mounted for action against tanks. However, the superior performance of the individual types of German fighter aircraft forced, also in this theatre of war, the replacement of Hurricanes with Spitfires. From 1942 on, American type aircraft, such as Kittyhawks and Warhawks, were used, while, at the same time, aircraft specially adapted to desert warfare, such as the Spitfire V, were being developed. Later in the Italian theatre, the most modern types of American aircraft were used almost exclusively.

Through its long period of operations, the units of the Desert Air Force never changed, but participated in all of the campaigns from Egypt to upper Italy. They flew more difficult and numerous missions than any other Allied air support unit. DAF's rich experience was reflected in its highly-finished operational techniques. Its activities were of decisive importance to the issue in Africa, as well as to the successes of the Eighth Army in Italy. The Luftwaffe SIS had followed the operations of the DAF from the earliest days, and was most familiar with the intimate details of its radio traffic.

b) The XII Support Command (Later XII TAC).

In connection with the landings in North Africa, there appeared the XII Air Support Command, which furnished air support to the American divisions concentrated on the western border of Tunisia. The interception of radio traffic from its combat units caused considerable difficulty in the beginning, for the reason that their R/T traffic was transmitted within a frequency band for the interception of which the Germans had only a very few receivers available. This deficiency was somewhat compensated for by the interception of the W/T traffic of the air support parties (ASP's).

The XII Air Support Command functioned efficiently in Tunisia owing, in no small measure, to its overwhelming numerical superiority. Its appearance on the scene reduced the Luftwaffe to the straits that remained typical of the latter's condition throughout the remainder of the struggle for the Mediterranean. An example of the grandiose scale of American tactics was the fact that where the Germans and British had been accustomed to deal in terms of individual squadrons, the lowest American tactical concept was the group. The XII Air Support Command was characterized by the readiness with which it adapted itself to the operational tactics and techniques of its ally, DAF. Of course, the Americans, in the beginning, were more undisciplined in their radio traffic than were the British. However, in the matter of planning and the effective execution of their missions, they yielded nothing in expertness to the DAF. The XII Air Support Command played a leading part in the preparation for, and protection of the landings in Sicily and on the Italian mainland. It contributed to the success of the American Fifth Army in the same measure as the DAF participated in the exploits of the British Eighth Army.

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After the landing in the Anzio-Nettuno area, the breakthrough at Cassino, and the Allied advances to the Pisa-Rimini line, the XII Air Support Command (now renamed XII TAC), was withdrawn for the landing operations in southern France. The Luftwaffe SIS was able to follow accurately each phase of the preparation for this operation, which preparation continued over a period of approximately three weeks. MATAF itself set up its command post on board one of the ships of the landing fleet lying in the harbor of Naples, and moved to Corsica. Only a liaison staff remained with the headquarters of 15th Army Group. Both Army and Air Force units were withdrawn from along the entire Italian Front. The operational area of DAF was extended to cover the entire front. The SIS thereupon observed the typical radio characteristics which preceded landing operations:

- The creation of new headquarters;
- Movements of units, and changes in their chain of command;
- Readying of troop carrier units;
- Concentration of radar;
- Appearance of special radio beacons;
- Preparatory attacks by heavy bombers on the Montpellier- Arles- Avignon-Toulouse area; finally, concentration of reconnaissance aircraft and fighter bombers over the intended beachhead on the south France coast.

After the landing, the XII TAC remained in France, and there appeared in its place in Italy the XXII TAC, reinforced by RAF units. Figure No. 1 shows its final organization as determined by the SIS.

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c) Medium Bomber Units.

The medium bombers (12th Medium Bomber Group - 12th AF; 3 SAAF Bomber Wing; 232 Bomber Wing, RAF) worked in Africa in close co-operation with DAF. Their bases, in contrast to those of the fighters, were not in the direct vicinity of the front. They usually appeared on the airfields vacated by the single-engine fighters, as the latter moved forward.

After the landing in Italy, all the medium bomber units were combined into a Tactical Bomber Force. However, in August, 1943 this force was dissolved. The 47th Medium Bomber Group went to the XII Air Support Command, while the British units were again assigned to DAF. The Mitchell groups (321st and 340th Medium Bomber Groups) were, after their move from the Foggia area to Naples, absorbed by the 57th Medium Bomber Wing, and transferred to Chisonaccia in Corsica. The 310th Medium Bomber Group, which, under command of MACAF, had been operating against German shipping in the Mediterranean, was likewise incorporated into this wing.

Meanwhile the 42nd Medium Bomber Wing (Marauder) appeared on the airfields around Cagliari in Sardinia, and in December 1944, at the time of its move to France, released the 319th Medium Bomber Group, which had been re-equipped with Mitchells, to the 57th Wing. This group, in turn, was also transferred to France in February, 1945.

Whereas the 42nd Medium Bomber Wing had a predilection for attacking industrial installations and troop concentrations in upper Italy, the 57th Medium Bomber Wing directed its attacks primarily against communications targets (railroads and bridges), in order to impede the flow of supplies and withdrawals

of troops. Later the focal point of its attacks lay in the region of the Alpine passes, where the Brenner, the bottle-neck of Italy, and so important to the German supply line, in spite of feverish reconstruction endeavors, was repeatedly being blocked.

The 47th Medium Bomber Group, in addition to its radar-controlled bombing attacks, carried out supply-dropping missions to the partisans in northern Italy.

It was more difficult for the Luftwaffe SIS to find possibilities for early warning in the radio traffic of the medium bomber units than in the case of fighters or heavy bombers. Tuning traffic was of significance in very rare cases only. However, occasional H/T traffic during the assembly period, interception of airborne radar transmissions, and, finally, those trifling clues that come only with experience, enabled early warning to be given up to two hours before the appearance of the medium bombers. However, targets could not be predicted, with the result that broad areas had to be alerted. These possibilities of early warning existed only in the case of daylight raids, and were not applicable to those at night. In the case of the 57th Medium Bomber Wing, a nineteen-group message was always transmitted on these days when the wing was to stand down. Although the contents of this message could not be deciphered by the SIS, it was nevertheless established that when it was intercepted prior to 1030 hours there would be no raid.

4. Tactics and Techniques.

a) Air Support Tentacle Networks.

In the beginning of 1942, certain messages were intercepted by the SIS Platoon, Africa, on networks located in the area of the front lines. These

messages gave an indication of the co-operation between the ground and air forces. Further monitoring and evaluation of these messages revealed that they were being directed by air force communication detachments, the so-called tentacles, with Army divisions, and later with all independent Army units, to an air support control. This air support control consisted of a staff of both air and ground officers, whose duty it was to balance the requests of the ground units for air support with the availability of combat aircraft, and to dispatch them against the reported targets.

After the tremendous importance of these networks was realized, they were monitored with all available facilities. The enemy's procedure as reflected in the W/T traffic ran approximately as follows:

The tentacle transmitted a message to the air support control, which message designated the target to be attacked in enciphered map co-ordinates. It described the target, for example, gun emplacements, motor coverage, troop concentrations, etc., and designated an orientation point with reference to the target. A tactical reconnaissance aircraft could also transmit a message according to the same form. The air support control acknowledged the message, and assigned flying of the mission to a combat unit. The latter sent a message in reply, reporting the time of take-off. After return from the mission, the combat aviation unit concerned reported the results to the air support control by radio. This report of results contained data concerning the target, degree of success of the attack, defensive measures encountered, the weather, and other comments. The procedure described here was developed during the Eighth Army's offensive in Africa, and was also used later by the American XII Air Support

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Command. In the case of the Americans, however, the tentacles referred to were known as air support parties (ASP's). The procedure attained special significance, finally, in the operations in France.

The German Command made all tactical use possible of these messages. The SIS was able to report immediately:

Type of target

Take-off time and strength of attacking aircraft

Exact position of the target (after breaking the grid encipherment in the middle of 1942)

Type of attacking aircraft, including its armament or bomb load

Unit designation of attacking aircraft (from R/T call-signs)

The time over the target (This was easily obtained from knowing the starting time, the distance between the Allied airfield and the target, and the average speed of the aircraft).

The SIS evaluation section sent this intelligence to appropriate headquarters by the speediest means. The reaction on the part of the German commands was the shifting of gun emplacements, the clearing of threatened sectors, the scattering of tank assemblies, or covering them with smoke, the re-routing of supply columns, the screening of headquarters and factory installations with smoke cover, advanced warning to troop entrainment operations, and to the railway system as a whole; finally, also, the alerting of German fighter units for immediate take-off to advanced landing strips directly behind the front lines, from which vantage points they could again take off to engage the enemy aircraft as the latter approached the prospective targets. As a result

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of these countermeasures, the expression "target not found" frequently appeared in Allied reports at the conclusion of missions. The monitoring of R/T traffic also served to disclose an impending attack. The original data intercepted, concerning target and time of attack, could be verified, in a given case, by means of flight path tracking through continuous monitoring and D/F-ing of enemy R/T.

These flash reports to German headquarters attained special importance during the battles in the Salerno beachhead area, in the Cassino sector, and at the time of the Allied assault on the Gothic line. This was especially true in the case of withdrawals from action, when wire communication at the front was limited, or non-existent, and intelligence as to the situation there could scarcely be obtained by higher German headquarters otherwise than as supplied to them by the SIS over direct trunk circuits.

SIS situation reports were compiled from air support messages, and were telephoned to appropriate headquarters. These gave, often hours before the arrival of corresponding reports from subordinate headquarters, a clear and detailed review of the front-line situation. Such reports soon proved indispensable to daily operational conferences, for example, at the headquarters of C-in-C, South. For this reason, SIS W/T detachments were set up, in the last years of the war, in the vicinity of Luftwaffe headquarters, in order to assure to the commanders and staffs immediate information on the ground situation under any circumstances.

In addition, most complete weather reports could be obtained from the air support networks, for which the Command was especially grateful. Since

all weather reports from air support aircraft, even for the same area, were rebroadcast by the air support control, several checks were always available. This resulted in a most accurate picture of the weather situation.

A distinct feature of air support traffic was the fact that messages were repeated on the different air support networks. This repetition served to heighten the accuracy of intelligence derived from them, the more so since in the repetitions corrections and adjustments of data were made. The German commands regarded these messages with great favor because of their unquestioned reliability.

b) "Cabrank" Technique.

After the two Allied air support commands arrived on the Italian mainland, their fighter controls became the dominant factor in controlling their operations. The mountainous terrain in Italy necessitated a more decentralized control of the air support forces. Since unforeseen targets were constantly cropping up, which it was impractical to attack in the usual manner, techniques were developed which permitted direct control of ground attack aircraft from the front. Among these "Cabrank" was of special importance. The procedure was as follows:

On a mountain from where an unobstructed view of the front was possible, a VHF R/T radio station, was installed in a tank. There was also present an HF W/T detachment installed in a tent. This "Rover" station maintained contact with the air support control through the W/T detachment; the R/T detachment maintained direct communication with the fighter bombers. Each day a definite combat unit (British wing or American group) of the air support

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commands, was placed at the exclusive use of the "Rover" stations. The latter ordered their aviation units, by reliefs, into pre-arranged aerial waiting areas. From there they could be called at any time by the "Rover" stations, and sent to attack specific targets. The "Rover" stations had wire communication to the front-line troops in their particular sectors. The ground troops, the "Rover" stations, and the aircraft, all had their own identical maps (Rover maps), so that identification of a given position could be determined accurately, and with a minimum loss of time. The "Rover" station not only informed the aircraft of the exact position of a target, and kept the aircraft posted by visual references, but also conferred with it as to the results of action taken against the target.

"Cabrank" was developed by the XII Air Support Command. In general, the Americans were the leaders in the development of air support tactics and techniques in the Italian theatre. This may be accounted for by the fact that the terrain features in Italy were more nearly similar to those known in Tunisia by the XII Air Support Command, than those with which DAF contended in the Libyan desert. Moreover, the Americans were generally superior to the British in tactical resourcefulness.

"Cabrank", which proved its merit in the South, especially in the case of assistance to ground operations aimed at breakthrough, nevertheless, in spite of its successes here, did not reach the significance it attained in the West after the breakthrough at Avranches. The open terrain of France was particularly adapted to warfare of maneuver, and made speedy air support of the armored spearheads the rule. The bases of the Allied air support units in the West lay farther to the rear than did those of the tactical air commands in

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Italy. This was due, on the one hand, to the stronger Luftwaffe forces maintained in the West, which forced the Allies to hold their airfields at a discreet distance behind the front, on the other hand, to the lightning thrusts of Allied armor, which left the Allied airfields far in their wake. Therefore, "Cabrank" became the only adequate means whereby the Allied air support power could effectively be brought to bear in operations. In Italy, this was not the case. The airfields of the tactical air commands (both RAF and American), as in Africa, were located in the vicinity of the front; the front itself, especially in the mountainous regions, was often stabilized for long periods of time, characterized by patrol activity only. Accordingly, progress was of a piecemeal nature, accomplished by thrusts in isolated sectors. In consequence, the planning and directing of operations could be undertaken in greater detail than in the West. While in the West, "Rover" stations were densely sited, in the South they appeared only at points of special tactical significance. The number, locations and arrangement of "Rover" stations were therefore always a reliable indication to the SIS of Allied intentions.

By the "Cabrank" procedure, the interval between the reconnaissance or tentacle message and the attack on the target, was reduced to a minimum as compared to that required in the more conventional type of air support operations, wherein the interval between the request and the attack often ran to several hours.

To be sure, it was possible for the SIS to monitor the air-to-ground traffic between "Rover" stations and their aircraft. However, the only conceivable defense against "Cabrank" would have been in the availability of strong

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German fighter units, held in a similar front-area waiting zone, which, upon notice from SIS, would immediately have engaged the Allied fighter bombers. This idea could not be seriously considered owing to the numerical inferiority of the Luftwaffe in Italy. Thus, the Germans possessed no means of combating the efficient "Cabrank" techniques.

c) "Pineapple" and Other Techniques.

A second technique, principally used by the fighter bombers of DAF, was "Pineapple". Upon receipt of a message from a reconnaissance aircraft by an air support control, those fighter bomber units already airborne were instructed to contact the reconnaissance aircraft, and to permit themselves to be guided to the target. The reconnaissance aircraft thereupon usually placed itself at the head of the formation, and pointed out the target either by means of R/T, or the dropping of smoke bombs. Whereas "Cabrank" was usually limited to use against targets on the main line of resistance, "Pineapple", by its use of reconnaissance aircraft in place of "Rover" stations, could be employed over wider areas and deeper to the rear. In "Pineapple" procedure, just as with "Cabrank", the Allied fighter bombers were held in a waiting area near the front and countermeasures on the part of the Luftwaffe were equally impossible.

In addition to "Dixie" which was a modification of "Pineapple", the fighter bombers of MATAF, especially those of DAF, used the "Timothy" technique. This was an area bombing procedure which did not depend upon the assistance of radio, but was purely a flying and bombing technique.

Greater importance, on the other hand, was attached to the "Directed Bombing" procedure, used primarily on the Fifth Army front. It was employed not

only by the 47th Medium Bomber Group, which specialized in this type of bombing, but also by fighter bomber units of the XII TAC. It was only used by RAF units in training. The fighter bombers were led to night targets by specially prepared radar stations in the vicinity of the front, which, together with radio, were used to control them. They were furnished continuously with azimuth and altitude instructions, and thus were vectored on to the target, finally, being given the order at a precise moment to drop their bombs. In the case of the twin-engine units, the control station gave the bomb release order by interrupting the R/T communication channel with morse signals, whereas the fighter bombers were instructed and corrected simply by R/T traffic. In contrast to the frequently inaccurate bombing of the 205 Group, RAF, the units controlled by the procedure outlined, continually increased their precision, which made radar-controlled bombing an extremely dangerous weapon.

d) MATAF Reconnaissance.

Reconnaissance squadrons were assigned to the air support commands (later tactical air commands) from the very beginning. In Italy, MATAF distinguished between tactical and strategic reconnaissance. Each air support command had two reconnaissance squadrons, which were used for the following purposes:

- aa) Artillery fire control missions. (These were generally flown by Austers with Mustangs as top cover. The Austers furnished adjustment and correction data on the artillery fire by means of R/T communication, and informed the fire-direction center of the position of the strikes or bursts).
- bb) Patrol flights over the front lines. (The front lines, especially in the mountainous regions, were kept under continuous observation by the day-time

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reconnaissance aircraft. In the event of the slightest movement on the part of the Germans, the reconnaissance aircraft called in the fighter bombers.) (See "Pineapple").

- cc) Tactical Reconnaissance. (For this purpose a dense reconnaissance patrol was flown twice a day over an area to a depth of 200 Km. behind the front line, the results of which were clearly manifested in the corresponding air support messages. These messages contained a total of all prospective targets, attackable on the same or the following day. The air support control decided which targets were to be attacked. As a rule twin-engine bombers were used on stationary targets such as railway installations, bridges, factories, and cities; the fighter bombers were used against mobile targets, such as motor convoys, troop movements, etc.)
- dd) Reconnaissance Prior to Daylight Bombing. (In the case of raids by the 57th Medium Bomber Wing, a Mitchell weather reconnaissance aircraft flew ahead of the formations, and gave an advanced report of the weather over the target, in order that the attacking aircraft might release their bombs from the most favorable altitude).

R/T traffic from reconnaissance aircraft was very limited; W/T traffic was practically never used. The most productive source of intelligence concerning their activity was the air support messages.

e) Night Missions of MATAF.

Night bombing units also were assigned to each air support command. 3 SAAF Bomber Wing, and 232 Bomber Wing (RAF) accompanied the Eighth Army all the way from Egypt to the Po Valley. The operational radio traffic of these medium bombers, which attacked supply routes and stationary targets to the rear

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of the front, principally on moonlight nights or in the early morning hours, and along the Dalmatian coast, was limited to sparse Safety Service messages. This homing traffic was transmitted by one aircraft per squadron only, and was not sufficient to permit countermeasures to be organized against the attacks of these units.

The 47th Medium Bomber Group (12th Air Force) attacked targets in the Fifth Army area by "directed bombing" procedure. SIS achieved no particular success in the monitoring of this traffic.

In the last months of the war, the tactical air commands were further supplemented by night fighter squadrons, whose particular mission it was to disrupt supply movements at night by low-level attacks. These attacks aggravated, to a considerable extent, the already-disorganized German transport situation.

5. Conclusions Concerning MATAF.

The operations of MATAF were so complex, and to a considerable extent dictated by decisions made on the spur of the moment, that there remained little opportunity for the observance of signal and cryptographic security regulations. Moreover, the Allies needed to be the less cautious, since the German Command lacked the resources to meet their attacks. That which could be initiated within the range of German capabilities was limited, in the main, to passive defense measures.

Consequently, the interception of the traffic of Allied air support units never caused the SIS any difficulties. The change-over, in Africa, from HF to VHF meant no more than an ordinary change in frequency, since the call-signs remained unchanged. By combining air-to-ground and ASP point-to-point interception

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at SIS out-stations, located near the front, and by means of direct telephone lines to German tactical headquarters and combat aviation units, the taking of prompt countermeasures, within the scope of existing resources, was assured.

The material intercepted was so voluminous and varied that at times only one of the many sources could be thoroughly monitored with the means at hand; in the case of the others a superficial monitoring only had to suffice. The evaluation of this material, especially in the last years of the war was done in so exact and workmanlike a fashion, that any change on the part of the enemy was not only recognized immediately, but simultaneously confirmed several times over. If any doubt existed as to the accuracy or completeness of a presentation of the situation as compiled by SIS, it could still be clarified and corrected on the same day by means of other SIS sources. The situation maps, which were prepared by the air support evaluation section of W-Leit 2, and distributed daily to various Luftwaffe headquarters, may have been just as accurate as those compiled by METAF headquarters. (For this reason, evaluation of intelligence from other sources dealing with air support units, such as press reports and prisoner of war interrogations, was deliberately discontinued by the SIS, since these latter sources tended only to complicate unnecessarily the precise and purposeful situation picture obtained from SIS material. *This shows how a break-down in the security of one source can be used to advantage against other more secure sources by permitting more disinformation.*

It was a course of bitter chagrin to the Luftwaffe SIS that the German Command lacked the resources to translate its realistic intelligence into offensive action. The peak of air support evaluation was reached during the last months of the war when the SIS was engaged in furnishing early warning to a German jet reconnaissance aircraft on an airfield in the Udine area. On one day DAF sent as many as 150 medium and fighter bombers in waves to attack these

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aircraft on the ground. The bombers plowed up the entire runway; but on the following day, much to the vexation of the British, the same jet aircraft flew its usual reconnaissance as far as the Ancona area. Owing to its speed, and to new photographic equipment, it was able to bring back from its two-hour sorties, a plethora of excellent aerial photographs, such as previously were obtained only by an entire Gruppe. The SIS found some consolation in the fact that at least the small remnant of the Luftwaffe remaining in Italy could make effective use of its intelligence service.

D. Allied Heavy Bomber Units in the Mediterranean (See Figure No. 1)

1. Development in Africa, 1941-1943.

a) 205 Bomber Group, RAF (See Figure No. 5)

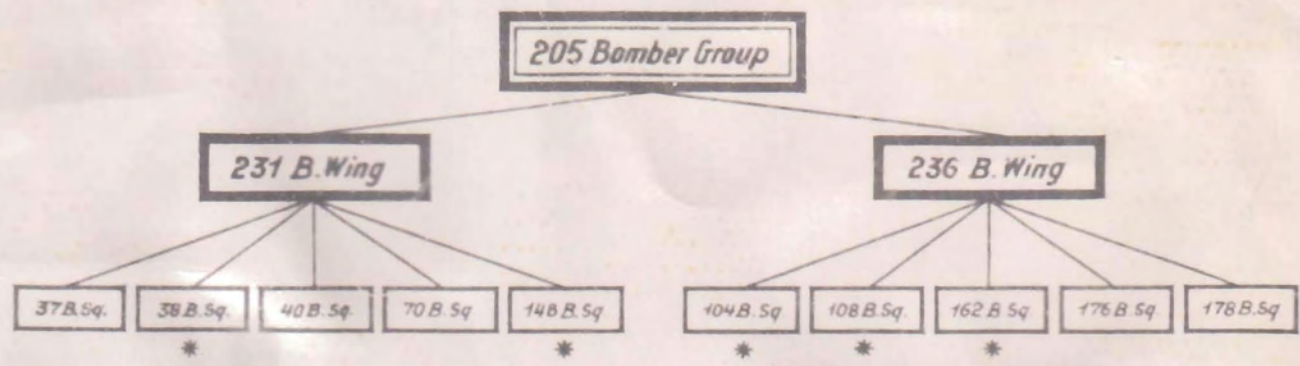
Upon the arrival of the first Luftwaffe SIS company, 9th Company LNR 40, in Taormina, Sicily, in January, 1941, the radio traffic of a Wellington unit was intercepted, which was soon identified as 205 Bomber Group, RAF, stationed in the Middle East. The presence of this group was known from press reports, since the British, and to a still greater degree, the Americans, used to discuss military affairs quite openly in their newspapers. The decoding of 4-figure messages soon resulted in a flawless picture of the group. It consisted at that time of two wings (231 and 236 Bomber Wings), with an overall strength of sixty aircraft, which flew daylight attacks against the Italian Army in North Africa. During the German campaign in the Balkans, at least one squadron was stationed in Greece on the Tatoi airfield near Athens. However, this squadron was presumably used only as a transport unit for the Grecian front. With the arrival of Rommel's "Afrika Korps" in the desert, and with it German fighters and flak, the group, with its slow and clumsy aircraft, suffered such severe losses that the daylight attacks had to be discontinued.

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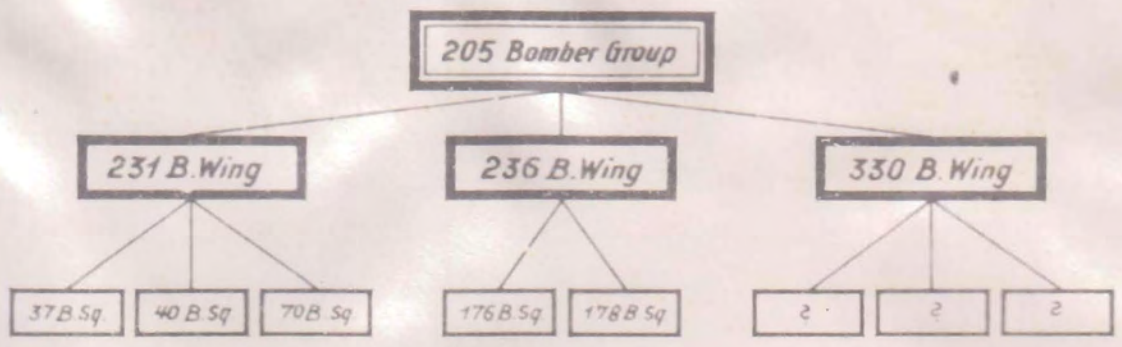
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Organization of 205 Bomber Group, RAF

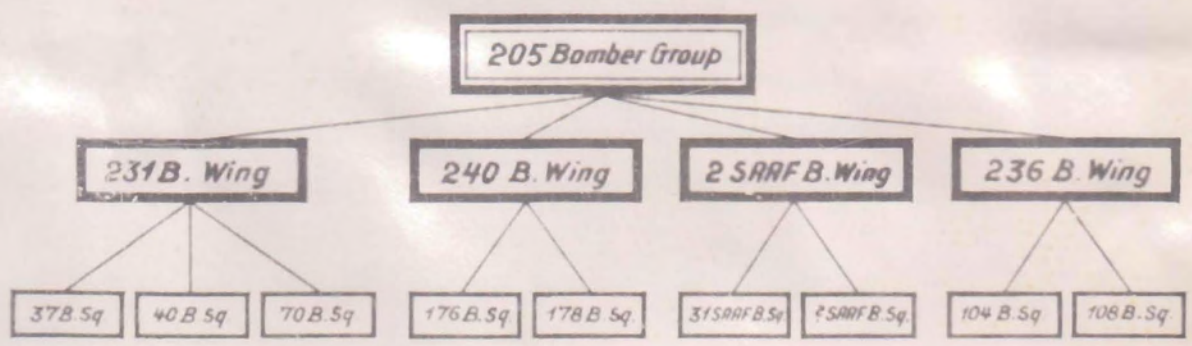
~ Middle of 1941 ~



~ Middle of 1943 ~



~ 1944 - 1945 ~



- * 38 Bomber Squadron transferred to 201 N.C. Group in summer of 1942
- * 148 Bomber Squadron diverted to supply dropping in the beginning of 1942
- * 104 and 108 Bomber Squadron transferred temporarily to RHQ Malta at end of 1942
- * 162 Bomber Squadron transferred to 201 N.C. Group (not known until middle of 1944).

Figure No. 5

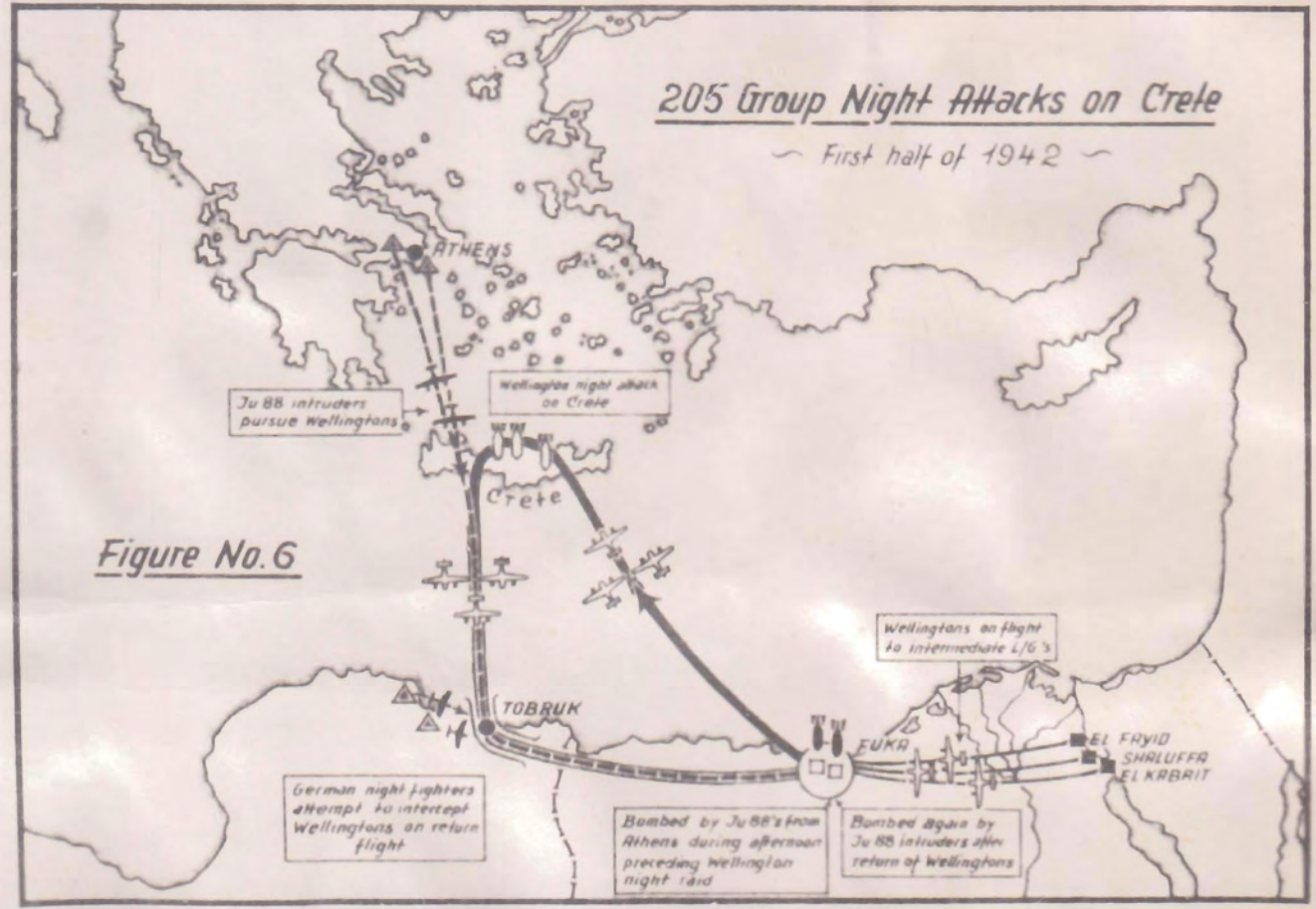
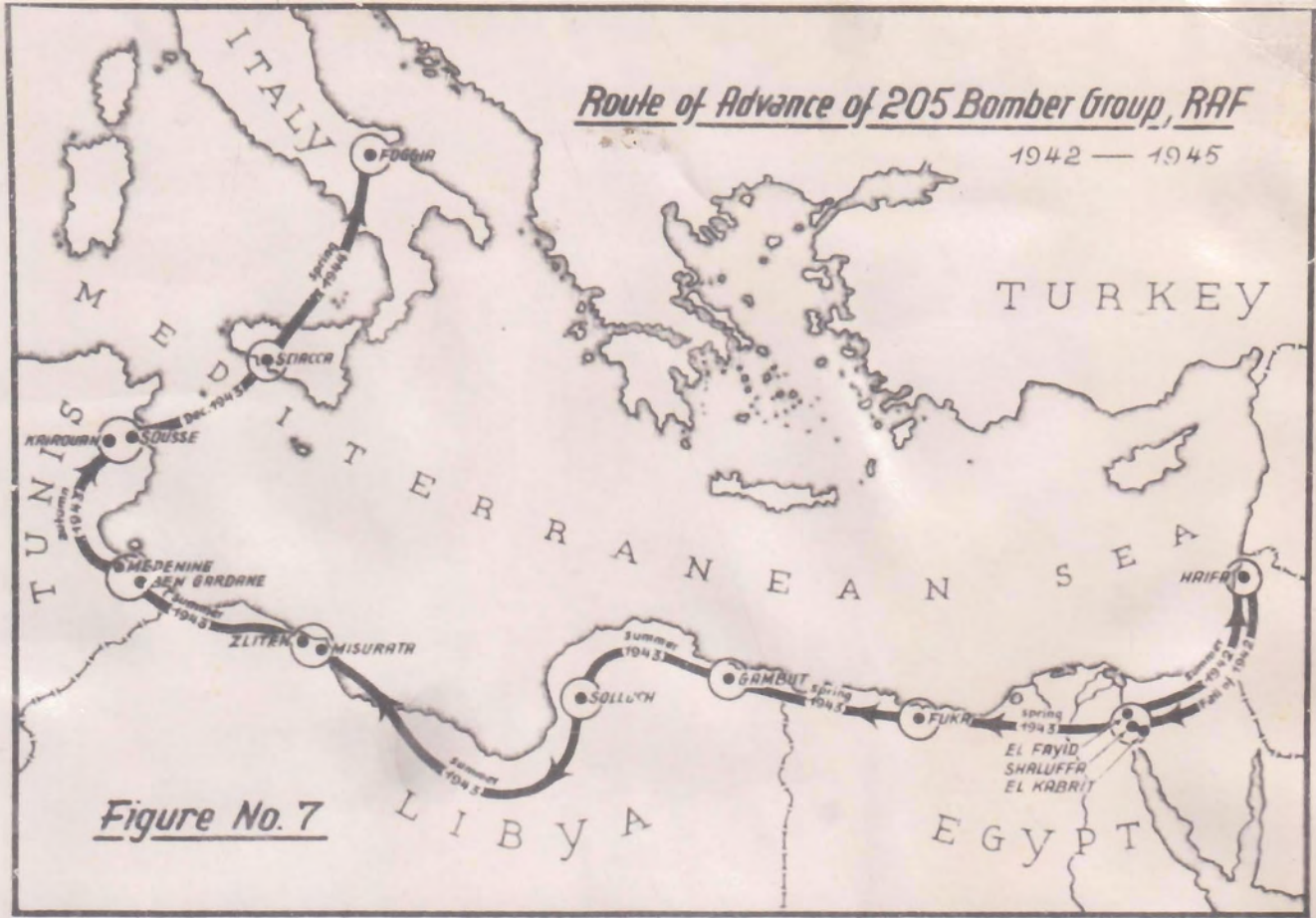
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Therefore, the group, which until 1942, was the only strategic bomber unit in Africa, began operations at night. Out of preference, it scheduled its raids either for moonlight nights or arranged them so that the aircraft would be over their target at daybreak. Its principal targets were harbor installations, or ships lying at anchor in North African ports, as well as ground targets far to the rear of the front. For this long-range activity the aircraft to participate moved forward from their bases in Lower Egypt (Kabrit, El Fayid and Shallufa) to advanced landing fields in the western desert (Landing Grounds 05,09). Since these preliminary movements were well known to the SIS, the German photo-reconnaissance units were spared the necessity of visiting these airfields, which also provided welcome targets for the long-range bombers of Fliegerkorps X, which were based in Greece. Thus, through the destruction of a number of Wellingtons on these intermediate landing fields during the day, the effectiveness of their night attacks was considerably reduced. (See Figure No. 6). The advance of the Afrika Korps, in the fall of 1942, occasioned the group's withdrawal to the Haifa area in Palestine. Rommel's later retreat first resulted in its return to the Lower Egyptian airfields, and thereupon its successive advances via the airfields of Gambut, Solluch, Misurata-Zliten, Ben Gardane-Medenine, Kairouan-Sousse, until finally, in the beginning of 1944, it established itself on airfields in southern Italy as part of the Mediterranean Allied Strategic Air Force (See Figure No. 7). There it was reinforced by 240 Bomber Wing, and later by 2 SAAF Bomber Wing, and thereby obtained its first 4-engine units.

With the arrival of the IX Bomber Command (USAAF) the missions of the British and American bomber units were co-ordinated. Targets which were

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raided by American bombers during the day were usually attacked again the ensuing night by the Wellingtons. With unflagging enthusiasm for its work, the group improved its operational techniques. Since in this early stage of the war there did not yet exist any electronic panoramic devices for locating a target, it began, considerably in advance of the RAF Bomber Command in England, to develop target illumination techniques (parachute flares, light buoys, etc.), whereby it perfected the accuracy and precision of its bombing on dark nights. In the case of especially important missions the dropping of flares over harbors and shipping targets was performed by individual Swordfish and Albacore aircraft of the Royal Navy Air Service. As early as 1942, it also attacked targets on Crete in addition to those in Africa. In this connection, the reliable intelligence service which the British had developed on the island proved extremely helpful. Thus it happened that when German ships arrived in Cretan ports they were promptly attacked the following night by 205 Group. In these cases, depending upon the importance of the target, the group flew up to eighty percent of its strength. To relieve pressure on the British front in Africa, the group also attacked the German air bases in Crete and Greece. From Benghazi it then began its carefully-planned destruction of Sicilian harbor installations. Following the conquest of Sicily, it turned its attention to targets on the Italian mainland (Naples, La Spezia, Genoa).

In contrast to their limited strength (approximately 80 aircraft in 1942, 120 in 1943, and 170 at the time of its incorporation into MASAF), the number of missions flown by the Wellingtons was impressive. Almost every night forty to sixty percent of its aircraft were airborne on missions into Axis-held territory. This represented a drain on flying personnel, which found no

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parallel among any other Allied bomber units. This was made possible by the constant flow of replacement aircraft from Great Britain, and the excellent performance of its maintenance units. In this connection might be mentioned the regular afternoon flights of 10 to 15 aircraft to maintenance depots, the traffic of which was intercepted by the SIS.

While the German Command still had an adequate number of aircraft on hand to undertake counter-action, the threat presented by this group was perhaps underestimated. Its inherent danger was magnified by the fact that no early warning was possible in its case. To this was added the fact that in the Mediterranean no night fighters of significant strength were anywhere available. When the Luftwaffe in the Eastern Mediterranean still had sufficient long-range bombers, it did make attempts to reduce the effectiveness of the night raids by the Wellingtons through attacks on their advanced landing fields, as has already been mentioned. Moreover, intruders followed the bombers in on their return flights, and attempted to destroy the latter as they were landing, or, failing that, they bombed the airfields anew. The lack of bombers on the part of the Luftwaffe forced the abandonment of these tactics from 1943 on.

Although the SIS was unable to supply early warning of the group's operations owing to the latter's secure radio discipline, still the radio traffic of the Wellingtons while returning from a mission was sufficient to permit clarification as to what unit elements had participated, as well as their composition and strength. Each wing had its own frequency on which Safety Service traffic especially was transmitted. Operational control during the attack was maintained by the group headquarters itself on a special frequency. This varied use of frequencies, coupled with the employment of fixed recognition letters,

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did not render it any more difficult for the SIS to determine which wings and squadrons comprised the individual formations, and therefore furnished valuable data for final evaluation. If the same recognition letter appeared twice on the same wing frequency, then this wing consisted of at least two squadrons. Frequently the operational strength of a wing was also determined from the fact that, in the case of especially important messages, the wing headquarters affixed to the operational call-sign the recognition letters of all the aircraft participating in the mission. The use of fixed aircraft recognition letters also made it possible to determine losses and replacements. It permitted, in addition, the recognition of moves to intermediate airfields prior to a raid.

b) The IX Bomber Command.

After the creation of a strategic air force in the Mediterranean had been repeatedly discussed in the Allied press, the fact emerged, through decoded messages, in the fall of 1942, that the "Halverson Detachment" had been set up in Ramat David, Palestine. The detachment was expanded, in time, into the 376th and 98th Heavy Bomber Groups, and, soon after the German retreat from El Alamein, moved to airfields in Lower Egypt (El Fayid, Shallufa and El Kabrit), where its training flights could be followed through its very voluminous Safety Service or homing traffic. From the subsequent transfers of the Liberators it could be observed that the heavy bomber units of the IX Bomber Command were continually moving into the airfields evacuated by 205 Group (RAF). Thus they moved, in turn, via the Gambut area, where they were joined by the 449th Heavy Bomber Group, to the airfields around Benghazi (Berka 1-3). Their strength was continually increasing; in the middle of 1943, at the time of their first attack

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on Ploesti, their strength may have comprised more than 150 B-24's. The first missions of the 4-engine bombers were flown from Lower Egypt against targets (airfields and supply installations) on the island of Crete in the beginning of 1943. Even though the damage inflicted by the still inexperienced crews was relatively slight, still the appearance of the colossal aircraft on a clear day, over what was hitherto considered Axis-dominated territory, was significant. Their real effort began after their move into the Gambut area. During the spring and summer of 1943, their attacks were regularly directed against the cities of Sicily and southern Italy; and the damage and panic caused by their appearance contributed essentially to the eventual withdrawal of the Italians from the war. Moreover, they also operated over the frontal areas, where the Allied tactical air forces alone were not succeeding in breaking up the German counterattack in the Halfaya Pass. They also bombed the German supply lines in North Africa, and occasionally the airfields on Crete and in the vicinity of Salonika and Athens. The beginning of their long-range raids was represented by the attack on the oil refineries of Ploesti, flown from bases in Benghazi on 1 July, 1943. The IX Bomber Command flew missions, on the average, once every three days, and with a mean strength of 60-80 aircraft.

The Luftwaffe High Command was fully cognizant, from the very beginning, of the danger threatened by an Allied strategic air force in the Mediterranean, and spared no effort to employ their already inferior forces as effectively as possible against this increasing menace. Therefore it was hoped that the Luftwaffe SIS, the principal source of intelligence concerning the enemy, would be able to obtain timely data on his intentions and movements.

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The SIS did not fail to meet these expectations. Ever since the beginning of its operational activity, the radio traffic of the IX Bomber Command, which comprised only W/T, had been very careless and undisciplined, the result being that order of battle, operational participations, and strength of the groups could be currently determined. The insecurity of American crews was distinctly revealed by the air-to-ground traffic during missions. An example of this was W/T chatter indicating the joy of the crews on finding themselves out of enemy territory and on their return flight to base. Frequent clear-text messages indicating positions, names, reports of casualties, and exaggerated SIS calls furnished additional intelligence. The outward flight of the formations could be accurately followed by means of the excellent D/F organization which W-Leit, Southeast, in particular, had created. Traffic upon which the D/F organization could work was furnished by the numerous instances in which aircraft reported minor engine trouble, and requested permission to return to base. An accurate source of early warning was obtained from a transmission characteristic of their ground station (call-sign 9KW). At first this characteristic seemed unimportant, but later it proved to be the means whereby German headquarters could be informed very early of an impending attack.

On days when a mission was to be flown, this ground station would transmit its call-sign, followed by a string of V's or figures. This was sent as a CQ call-up, and continued at most for a minute. It was repeated several times during the course of a raid. By noting the time interval between the first appearance of this transmission, and the time that the B-24's released their bombs, the SIS was able to determine that the first of these transmissions always occurred either when the bombers were just taking off or were still in the assembly area. From spring until late summer of 1943, the long-range

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targets of the B-24's were almost entirely in either Sicily or southern Italy. Raids still flown against targets in Greece, were, compared to those flown against Italy, now almost insignificant. Therefore their time over the target could be easily predicted. From the first time that call-sign 9KW was heard, the bombers required three hours to reach targets in Sicily, three and one-half hours to southern Italy, and four hours to central Italy as far as Rome (See Figure No. 8). After an initial reticence, the bulk of German fighters was sent up to meet the 4-engine bombers, purely on a basis of these early warnings.

In the late fall of 1943, the heavy bomber units were transferred from Benghazi to the Kairouan-Sousse area where they were joined by the XII Bomber Command. From these two commands, reinforced by aircraft ferried from America, the 15th USSAF was created in Tunisia, which in January 1944 moved to the great airfield center of Foggia on the East coast of southern Italy.

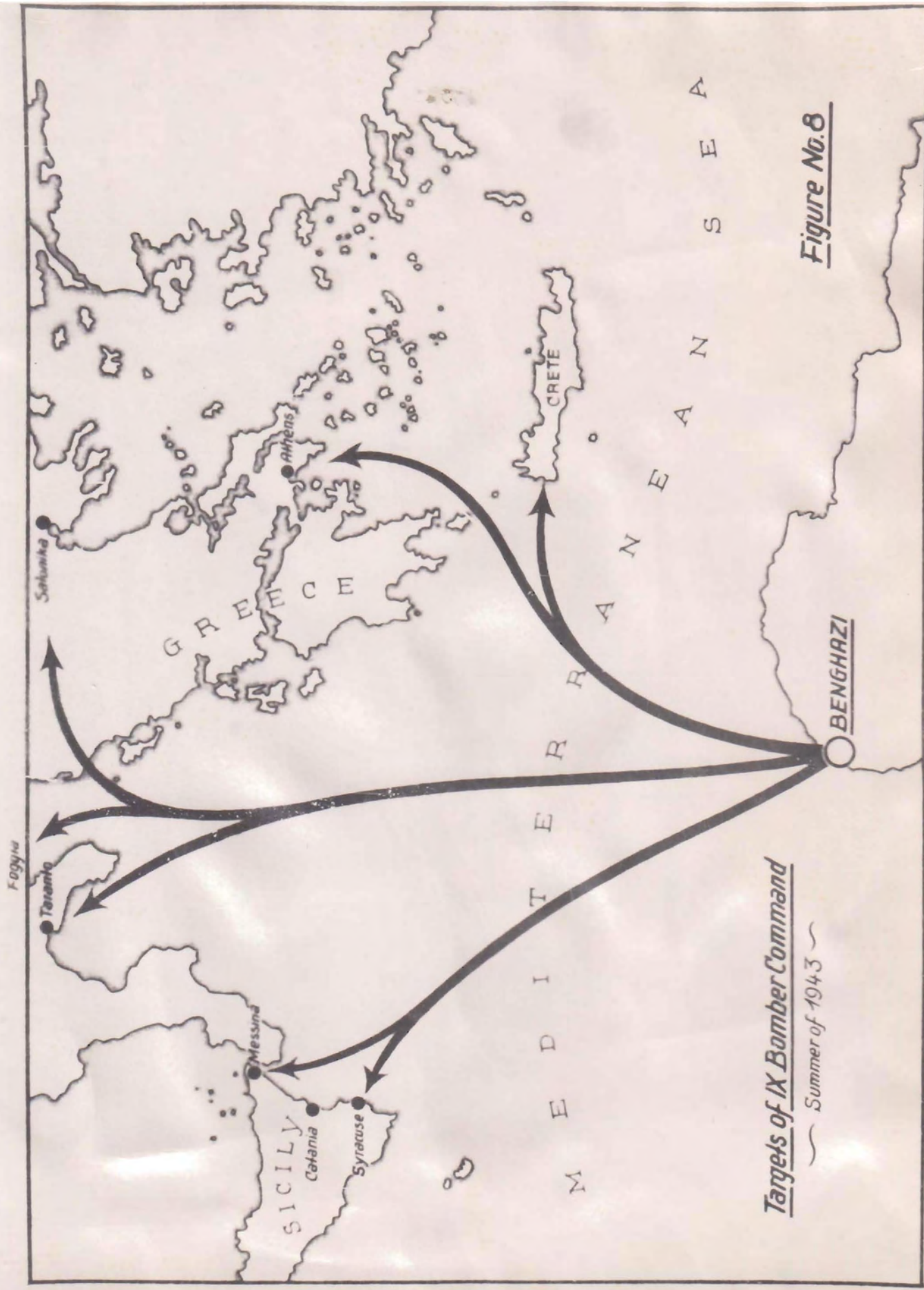
The 12th Medium Bomber Group, equipped with B-25's, was also assigned to the IX Bomber Command. This group, based in Gambut, attacked targets in the rear of the German front in Africa. In the fall of 1943 it was transferred to Great Britain where it formed the nucleus for the re-establishment of the IX Bomber Command.

c) The XII Bomber Command.

From the thorough monitoring of the Allied Ferry Command in the winter of 1942-1943, it became apparent that large-scale ferry flights of 4-engine aircraft were being made to North Africa over the north Atlantic route (UK to Casablanca), and over the Natal, Accra, Marrakesh route to the Oran-Algiers area. These movements confirmed the rumors of the creation of a second

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Compare to the discussion on the subject W. J. ... and pgs 25-27



Targets of IX Bomber Command

~ Summer of 1943 ~

Figure No. 8

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American heavy bomber command in Africa. Thus, in the spring of 1943, the XII Bomber Command, which had already appeared in the final battle for Tunisia, began its attacks on the western Sicilian cities, and devastated them even more completely than did the IX Bomber Command the cities on the eastern coast of Sicily.

The Luftwaffe SIS found itself confronted with considerable difficulty when these bombers made their appearance, since not only their tactics, but also their radio equipment differed from that of the IX Bomber Command. The aircraft of the XII Bomber Command flew with fighter cover, and employed R/T rather than W/T. They used a radio set, the frequencies of which exceeded the previously-encountered frequency band of the RAF, 100-120 mcs, and for the monitoring of which no receivers were at first available. Nevertheless it was possible, at least during the Tunisian campaign, thanks to the messages of the air support party networks, and the deciphering of the grid references contained therein, to give early warning of XII Bomber Command missions. It was also possible to recognize and plot their raids against Sicily by means of intercepting and D/F-ing their ranging-tone transmissions. These were sent by the aircraft in order that their ground stations might plot and vector them. However, apart from this intercept D/F-ing, the monitoring performed by the out-stations of W-Leit 2, was only fragmentary and devoid of a substantial basis. So the SIS was never able to determine the total strength of this command, which, however, must have been considerably superior to that of the IX Bomber Command; nor was it able to determine the various units to which aircraft participating in individual raids belonged.

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The XII Bomber Command, by systematically ploughing up the remaining German airfields in Tunisia, made a noteworthy contribution toward the destruction of the Luftwaffe in Africa; it also played a leading role in the subjugation of the islands surrounding Sicily. After the conquest of Sicily, its attacks were directed against central Italy. Its units moved to the Tunis area, where they were, together with units of the IX Bomber Command, reorganized into the 5th, 47th and 304th Heavy Bomber Wings. In December, 1943, they moved to bases in the Foggia area, which had meanwhile been prepared for them; there they were joined by the 49th and 55th Heavy Bomber Wings which had just arrived from the United States. Thus was the Fifteenth United States Army Air Force created.

2. Development in Italy (15th USAAF).

a) General.

The heavy bomber units, with the activation of the 15th Air Force, and the move from Africa to the European mainland, now became a dominant factor in the war. From Foggia, not only the Balkan countries, but also southern Germany, Czechoslovakia, and the last secluded industrial area of the Reich, Upper Silesia, lay within comfortable range of the Fortresses and Liberators. The development of long-range fighters, Lightnings and Mustangs, provided thorough protection against attacks of the Luftwaffe fighter arm. The German Command was thus forced, as it was in the West, to develop a system of defense for the South and Southeast. Nevertheless, it could not prevent the collapse of the Balkan States, which was one of the principal objectives of the enemy attacks. For Roumania, Bulgaria, and Hungary the gradual devastation of their principal cities represented a hardship, which these people simply could not withstand; for these countries, Bucharest, Sofia, and Budapest not only represented their

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capitols, but also the very focal points of their national existence. The capitulation of these countries, however, made the continuation of the war hopeless for Germany; without Roumanian oil, and the food supplies of the Balkans generally, even the most undaunted further resistance of the German people, as subsequent events proved, could be broken within a few months.

b) Organization and Strength.

The XV Bomber Command comprised one wing of B-17's (5th H.B. Wing), and four wings of B-24's (47th, 49th, 55th and 304th H.B. Wings). In the beginning the wings were of varied size, and were only brought up to full strength during 1944. The strongest wing was the Fortress wing, which had five groups. Each of the remaining wings had four groups, each group comprising four squadrons. The actual strength in aircraft, according to the SIS, was probably about 1260 heavy bombers in the beginning of 1944, and by the end of the war had been increased to approximately 1460.

At first only the 5th and 47th Wings flew with fighter protection, each wing being accompanied by two squadrons of long-range Lightnings. As the attacks increased in intensity, the fighter cover was reinforced by additional Lightning and Thunderbolt units. The Thunderbolt squadrons were re-equipped with long-range Mustangs once the latter were developed. In the spring of 1944, the XV Fighter Command was formed in Torre Maggiore; the three Lightning groups were combined into the 305th Fighter Wing, and the four Mustang groups into the 306th Fighter Wing. The 332nd Fighter Group, which consisted entirely of negro personnel, was later removed from the 306th Fighter Wing, and transferred to the 57th Medium Bomber Wing as fighter escort. The long-range fighters of 15th USAAF were likewise based on airfields in southern Italy. Their total

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strength toward the end of the war was approximately 750 aircraft.

The 15th Air Force also boasted a long-range reconnaissance squadron (154th Weather Recon. Squadron, call-sign "Tailpiece"), which flew as many as eight sorties per day to determine the weather factor along the proposed route and over the target for the daylight operations of the bombers. The squadron's total strength was approximately 25 aircraft.

c) Tactics and Operations.

Building upon the experiences of the two bomber commands in Africa, the 15th USAAF began to develop completely individual and flexible tactics. These tactics differed in essentials from those employed by the puissant, though comparatively primitive, procedures of its counterpart in Great Britain, the 8th USAAF. The Luftwaffe fighter arm was restricted in its efforts against the 15th Air Force owing, on the one hand, to the spaciousness of the Southeast, and, on the other, by its heavy commitments in the West. In the first half of 1944, the greater portion of its attacks were directed toward the elimination of the German satellite states; in this connection co-operation with the Russians was clearly noted by the Luftwaffe SIS in the Russian air raid warning networks. In the absence of any effective Russian heavy bomber force, the 15th USAAF also performed the function of a strategic air force for the Ukrainian Front of the Red Army by delivering blows against the German installations and supply routes in the eastern Balkans. The bombers attacked, in the main, installations on the line of communications, especially the railway centers, of such decisive importance in the East; cities, especially the capitols of the Balkan countries; and industrial targets (Ploesti). The escorting fighters, after discharging their primary task of protecting the

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bombers, swept German airfields, or strafed individual communications targets such as trains and motor convoys. After the collapse of the German position in the Balkans, the focal points of the attacks were shifted toward the northwest, and concentrated on Austria, Bavaria, Czechoslovakia, and above all, Upper Silesia. As memory serves, the farthest penetrations were flights to the industrial area of Saxony, and to Posen and Lublin. The Luftwaffe fighter arm, in some cases immobilized through lack of fuel, and in others through sheer exhaustion, conceded to the American bombers, in increasing measure, virtual freedom of the skies over all of Germany. Toward the end of 1944, they abandoned their tactics of attacking in large, tight formations, and spread out in fan-like fashion from a designated initial point, attacking widely-separated targets in small groups. They then returned in the same small formations, so that on certain occasions those cities in southern Austria lying on their route were under a state of air raid alert all day.

The assembly of the units over the Adriatic was directed by their "assembly masters" who returned to their bases after completing their functions. The assembly originally required an hour and a half to two hours, but toward the end of the war was reduced to one hour. Along the Dalmatian coast, there existed bad weather assembly areas, which were also divided into waiting areas. Upon completion of the assembly, the formations took their heading on a broad front. The courses were usually fixed, and from them alone the individual target areas could be predicted with tolerable accuracy. When aircraft crossed the coast near Split on a north or northeasterly heading, it usually signified a raid on the Balkans, or Czechoslovakia. If the coast were crossed in the Fiume-Pola area, a raid on eastern Austria was indicated; if at Venice, western Austria or Bavaria. (See Figure No. 9).

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Early Estimate of 15th
USAAF Intentions by SIS

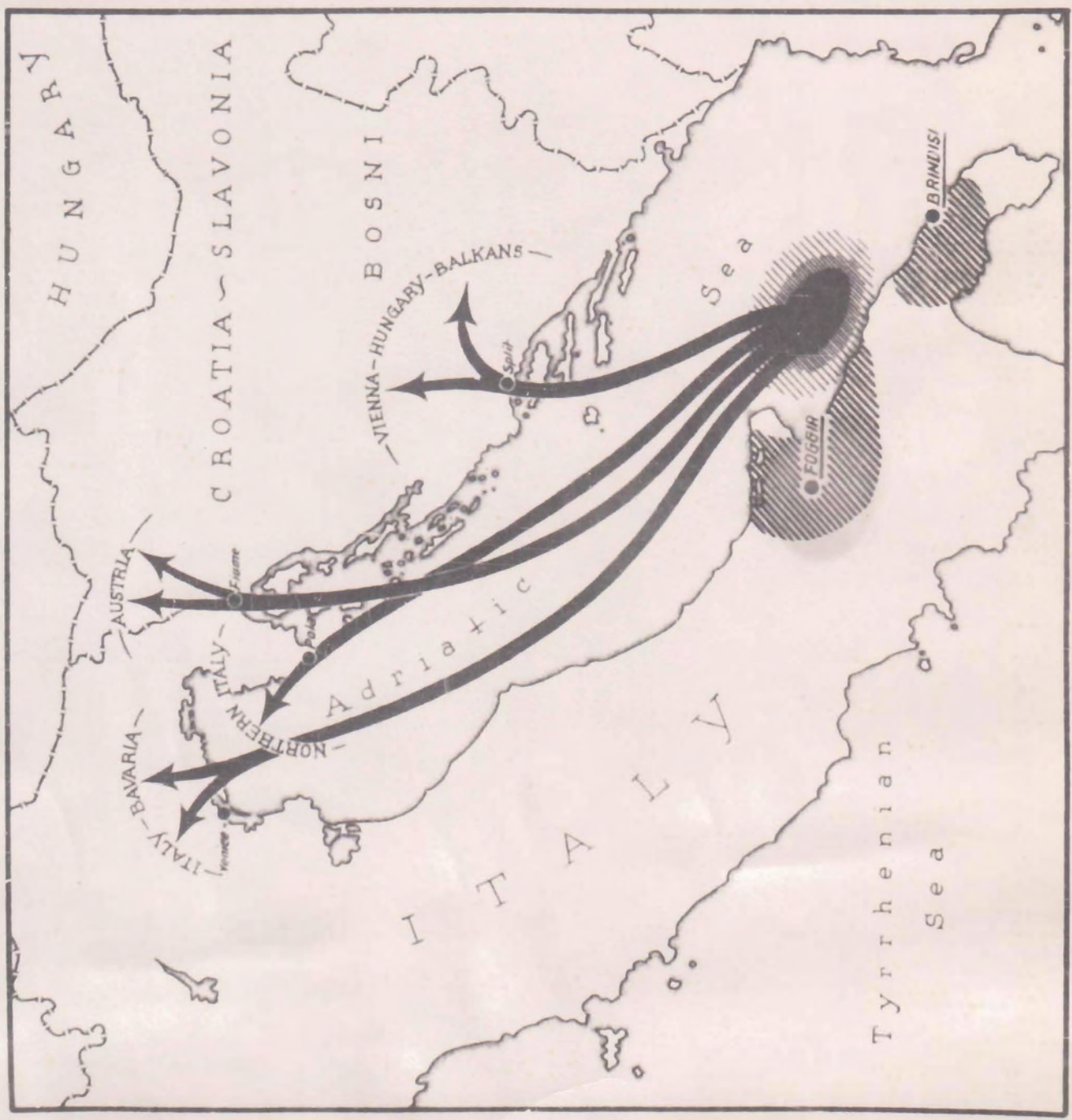


Figure No. 9

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For the rendezvous with the fighters, assembly points marked by special terrain features were chosen (Neusiedler See, Lake Balaton, Lake Ochrida). Each bomber formation attacked in accordance with instructions from its leader. Attacks were usually made from an altitude of 18,000-24,000 feet. The return flight over the Alps brought a sense of relief to the crews. Frequently, damaged aircraft landed on the nearest Allied airfield serviceable for 4-engine aircraft. Unconfirmed losses were probably considerable. This was proved by the existence of maintenance facilities for heavy bombers which were established on advanced airfields, such as those on the island of Vis and directly behind the Italian Front.

The 15th Air Force employed two types of fighter cover. The first was close escort, the other a fighter sweep preceding the bomber formations. The close escort remained with the bomber formation from the point of rendezvous, its purpose being to protect the bombers from attack by German fighters. Only in the last months of the war, when the German fighter arm made most infrequent appearances, were these fighters free to attack targets of opportunity. The fighter sweep escort preceded the bomber formation, sometimes by several hours. Originally, its mission was either to prevent the take-off of German fighters by attacking their airfields, or to intercept their attacks on the bombers. An additional task was to strafe flak emplacements in low-level attacks. In the last stage of the war, the fighters usually flew free-lance missions in the general area of the bomber targets, principally attacking critical communications points, so that in a certain respect they represented an extended arm of the tactical air force. From the end of 1944 on, these fighters also carried small bombs for use in the area bombing of cities from

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a high altitude. For this purpose the leading aircraft of the fighter formation was equipped with H2X. In general the co-operation between the bomber units and their fighter escort was admirable. This was indicated by the R/T traffic which usually passed between the two elements to an extensive degree, from the rendezvous point on.

Similar to the 8th Air Force, the 15th USAAF flew daylight missions exclusively, usually releasing its bombs over target during the noon hours. In the case of the individual units, retraining for night operations was observed in November, 1944. In fact, isolated night attacks actually took place in December without observance of the strict radio discipline that had been ordered. However, the 15th Air Force seemed to forsake this innovation, probably in view of the slight resistance only which the German fighter defense was able to present toward the end of the war, since during 1945, the formations of the 15th Air Force appeared only by day.

When during the battle for Cassino, the Allies were unable to advance, despite very great expenditure of material, the assistance of the heavy bombers was summoned. The second air support venture by the 15th Air Force was undertaken during the invasion of southern France. Further use of the strategic air force on close support targets, was discontinued, since it was proved that the elimination of such targets could be accomplished more effectively by medium bombers.

Daily long-range weather missions were flown by the reconnaissance aircraft of the 15th Air Force, by means of which a decision as to areas in which operations were feasible could be made in the early morning hours. Since

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these weather reconnaissance aircraft reported their findings back to base on R/T by means of relay aircraft, the German SIS was in a position to give early warning on the basis of the intercepted traffic. However, this system of early warning contained two great defects: firstly, the weather reports were given only for large areas such as Roumania, Hungary and Bavaria, and therefore the target area could not be localized; on the other hand, it could still not be determined whether a raid would take place or not. Since the middle of 1944, these daily weather reconnaissance flights were carried out over several different target areas, so that no precise conclusions could be drawn from them. However, as in the West, a weather ship flew ahead of the bomber formation, which transmitted to the formation leader reports of the weather in the areas to be traversed. The greatest value therefore was placed on the interception of his short messages, the simultaneous D/F-ing of which revealed the direction which the bombers would pursue. In the afternoon, following a morning's raid, a photo-reconnaissance aircraft was sent to observe the effects of the bombing.

d) Early Warning and Flight Path Tracking.

The transfer of the heavy bomber units from Africa to southern Italy provided the impetus for a radical re-organization of the Luftwaffe SIS in the Balkans. W-Leit, Southeast, which up to this time had concentrated on point-to-point networks, and had devoted its entire effort toward final evaluation, and producing a strategic picture of the air situation, now found itself constrained to concentrate on the flight path tracking of Allied heavy bomber formations, and tactical evaluation. In this new field only one of the units of W-Leit, Southeast, the former intercept company in Crete, possessed any prior

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experience. The first step was to set up a belt of VHF and radar intercept out-stations along the Dalmatian coast. Thanks to energetic support from the Chi-Stelle, this was accomplished with a minimum loss of time. Since the most favorably situated of these out-stations, that at Dubrovnik, lay directly opposite the airfields of the heavy bombers, and since the latter chattered considerably at the time of take-off as well as in the assembly areas, timely early warning could be given on each occasion that a bona fide mission was recognized (different call-signs were used for operational and training flights).

The tracking of the bomber formations caused difficulties. Whereas, in the case of MATAF, the networks were so prolific of traffic that at times the interception of only one was needed to compile a most complete picture of the situation, in the case of the 15th USSAF every VHF R/T message, IFF plot, H2X bearing, HF W/T message, and HF R/T message, had to be carefully considered in order to assure the tracking of the bomber formations. The relative importance of any one of these sources changed from raid to raid. The breadth of the target areas, the potential threat to the out-stations of the partisans in the Balkans, and the flexible tactics of the heavy bomber units in the South, never permitted the establishment of any standard operating procedure as was developed against the 8th USAAF in the West under the direction of Meldekopf 1. Another difficulty was the completely different scheme in the use of call-signs and frequencies from that employed in the West. In the case of the bomber units of the 8th Air Force, each VHF frequency signified either a bomber division or a combat wing. Once established, its block of call-signs prevailed throughout the entire period of the war with only inconsequential changes in the system of their rotation. The R/T interceptor in the West, had

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by his side concise data serving to identify any traffic he intercepted. In the South, on the contrary, call-signs changed daily, and each group had a separate frequency. From the final months of 1944 on, when close formation tactics were abandoned, and numerous individual targets were attacked by bombers in small separate formations, the situation became completely baffling. Even aircraft of the same group were split up among different formations (See Figure No. 10).

The complicated R/T call-sign and frequency system of the 15th Air Force achieved its objectives; the Luftwaffe SIS required months to identify accurately the individual group frequencies. Moreover, the resources in personnel and receivers fell far short of what was required to monitor all these frequencies. A further difficulty lay in the great number of flash messages from the out-stations which were necessary to the evaluation sections in determining the unit composition, and strength of the attacking formations. These messages constituted such a burden on the communication system, which, moreover, was principally radio channels rather than land-lines, that, for example, the reporting of aircraft recognition letters, which were necessary for calculating strength, could only be undertaken at the expense of reports of bearings. For all that, the principles underlying the allotment of call-signs and frequencies by the 15th USAAF were rapidly clarified, and flight path tracking, despite all these difficulties, was assured by the large; only the comparative ease with which similar difficulties were resolved by Meldekoepfe 1 and 3, in the West was lacking. In the South the SIS communication network could not quite keep pace with the strain imposed upon it by the tactics of the 15th Air Force.

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A further disadvantage in the South lay in the difficulty of coordinating the various signal intelligence data. The 15th Air Force, as monitored by the HF W/T and R/T platoons of W-Leit 2 in Italy, presented a different aspect than it did to W-Leit, Southeast, which worked primarily on VHF and radar intercept. The integration of the two types of monitoring loomed as inevitable, when, owing to the ascendancy of guerrilla activity in the Balkans, W-Leit, Southeast, was forced to withdraw its out-stations in Albania and Dalmatia. The necessity of accurate early warning and flight path tracking against the raids of the 15th USAAF, was finally the decisive factor leading to the activation of the SIS Regiment, South. Through the creation of a central Meldekopf directly subordinate to the regiment, and comprising of both battalions, the centralization of all techniques and intelligence in the South was achieved. The consolidation of the Meldekopf and evaluation company of the regiment, likewise conceived from the very beginning, was never realized owing to the difficulties which would have been interposed in finding quarters for such a large unit (approximately 350 men), in districts already overburdened with refugees. As a temporary solution, the existing evaluation section at the Meldekopf was reinforced with personnel from the regimental evaluation company. After the loss of the VHF and radar intercept stations in Dalmatia, new possibilities for early warning had to be sought in the HF traffic, as well as to compensate for the loss of the VHF traffic of the bombers as they flew from the assembly areas to the northern Adriatic, at which point the first reliable VHF interception could be made by the then southernmost VHF out-station, the SIS platoon near Zagreb. A particular compensation was found in the HF W/T traffic emanating from the control

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station of the 47th Bomber Wing.

~~XXXX~~ The ground station of this wing (Q4T) sent tuning traffic every hour on the hour, regardless of whether a mission were to be flown. If individual aircraft receipted the messages, a raid could be anticipated with certainty. If these responses from the aircraft were heard at an early hour, it meant that the 47th Wing was flying either as the leading formation, or in second position. When, during a mission, the aircraft failed to receipt for one of these hourly tuning messages, it could be taken for granted that the bombs would be dropped within the next hour. Every hour, to coincide with the tuning transmissions of the 47th Wing, all available HF D/F's of the SIS were placed on the wing frequency, and from bearings taken on transmissions from the aircraft receipting these messages, the course of the formation could be plotted. In addition to this air-to-ground traffic, tuning messages were exchanged between the leading aircraft of the different squadrons. These messages also took place on HF W/T, and occurred every hour on the half hour, operational call-signs being used. Since this tuning traffic lasted for a longer interval than did that from the ground stations, it not only afforded excellent opportunities for D/F-ing, but also permitted computation of the number of aircraft of the wing participating.

break in continuity on the

The W/T traffic of the other wings was far less fruitful. Nevertheless, it could be determined from the general signal intelligence picture, built up over the course of the morning, whether a raid were impending. From W/T traffic alone, it could usually be decided whether Allied bombers heard taking off were being airborne for an operational or a training mission. In

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the latter case, for example, the aircraft were always heard in Safety Service traffic with D/F stations of 205 Group (RAF) .

R/T traffic proved even more productive of results. However, the deficiency of SIS Regiment, South in VHF receivers, coupled with the complicated call-sign and frequency systems of 15th Air Force, permitted identification of the numerous group frequencies only with the aid of captured documents. Moreover, the D/F-ing of airborne radar, especially IFF and H2X, was more important to SIS work in the South than it was for Meldekopf 1 in the West in its effort against the 8th Air Force.

In summation, early warning was assured by the monitoring of W/T frequencies and radar intercept. On one occasion radar intercept would prove the more fruitful for flight path tracking; on another, VHF R/T or HF W/T. In the latter months of the war, strength and composition of formations could be determined only from R/T traffic, which was also the only means of following the mult-target tactics of the 15th Air Force, when they were adopted.

The leadership of the 15th Air Force was impressively superior. This was evinced by the nature of its operational planning, which resulted in carefully-designed attacks on high priority targets. Even though the enlisted men of the air crews appeared to be drawn from the ordinary walks of life, they were distinctly security conscious, as was proved wherever captured crews were interrogated. The officer corps displayed a resourcefulness in operations, which considerably increased the smooth functioning and striking power of attacks. The refined technique underlying the assignment of call-signs and frequencies to combat units, as well as the employment of R/T

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interceptors, was a high tribute to the acumen of the signal officers. Also to be mentioned in the continuous training activity by which a uniform proficiency was achieved among the units.

Following the tradition of the IX Bomber Command, the 15th Air Force flew, until the fall of 1944, a long-range mission every third day on the average, each mission comprising 400-500 bombers. After the collapse of the German position in the Balkans, and the consequent shifting of the main air effort, the intensity of its attacks increased considerably. In the event of favorable weather, missions were flown to Bavaria, Austria, Czecho-slovakia, and Upper Silesia, while bad weather brought attacks on communications and industrial targets in northern Italy. The average strength in these attacks comprised 600-700 aircraft. The last raid on Germany before the end of the war was on the railway installations at Attnang-Puchheim, near Linz, where the last undamaged, large marshalling yards in southern Germany were reduced to rubble. From the middle of April on, it concentrated exclusively on the German-held territory of Italy, where its large-scale attacks of attrition hastened considerably the capitulation of the German Army Group C.

e) 205 Bomber Group RAF (See Figures No. 1 and 5)

After 205 Group finally settled down on airfields in southern Italy, and was reinforced by two Liberator wings (2 SAAF Bomber Wing and 240 Bomber Wing), it now began to attack land targets (cities, lines of communications, airfields) in addition to its customary bombing of harbor installations (Genoa, La Spezia, Pola). The B-24's of the two newly-added wings, which were equipped with electronic panoramic devices, served as Pathfinders for the Wellington

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units. Only at the beginning of 1945 were the 231 and 236 Bomber Wings also re-equipped with Liberators, so that finally the whole group was composed exclusively of B-24's. The night attack technique of the group, involving the use of target illuminators, remained essentially, unchanged. The use of Pathfinder radar permitted greater independence of weather conditions; however, moonlight nights were still preferred. As in the case of the RAF Bomber Command, the approach flight to the target area was carried out in a bomber stream; once over the target the aircraft, one after the other, released their bombs. The return flight was in an open formation. The group's depth of penetration was limited to southern Austria; even after re-equipment with Liberators, its attacks extended no farther than Bruck-on-the-Mur, which was in its northernmost objective. It attacked, on the average, three or four times a week, and maintained this pace of operations even during the last stage of the war. A principal target of the group were the cities of Graz and Marburg through which, toward the end of 1944, passed all supplies for the German front in the Balkans. In addition, individual squadrons were used for mining the Danube.

A considerable part of its activity, especially during the summer of 1944, was the supplying of the insurgents in the Balkans; by both day and night, the Wellingtons dropped arms, munitions, and medicinal supplies to Tito's partisans. The range of the supply-dropping missions of the Liberators extended as far as Slovakia and Poland. In the fall of 1944, they even supported the resistance of the Warsaw Poles by dropping supplies to them. (See Figure No. 14, Page 58a.)

The successes of the group were significant since it always maintained good radio discipline, used its Pathfinder radar sparingly, carefully

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avoided flak barrages, and always chose targets where the presence of German night fighters did not have to be reckoned with. It held its losses within narrow bounds. The results which it achieved, as the only long-range night bomber unit in the South, far exceeded those which might ordinarily be expected from a unit its size.

B. Mediterranean Allied Coastal Air Force, MACAF. (See Figures No. 1, 11 and 12)

1. 202 Group, RAF, and AHQ Malta, 1941-1942.

The 202 Group was a Catalina and Sunderland unit, which was stationed at Gibraltar. It reconnoitered the Atlantic from Cape Ferrol to Casablanca and westward to the Azores; the Mediterranean as far to the east as Cape Bougie. Its reconnaissance of the Atlantic was carried out in closest co-operation with 19 Group, RAF Coastal Command, based in southern England. The latter, in its long-range reconnaissance of the Atlantic, frequently used Gibraltar as an intermediate landing field.

One duty of 202 Group was anti-submarine patrol; the other, convoy escort. During the first years of the war, reconnaissance was carried out only by day, and no electronic devices had yet been developed for detecting submarines; submarines when sighted were attacked with depth charges. Each mission lasted, on the average, between seven and nine hours. Radio traffic was very scanty, and was limited to reports of sightings, and homing procedure during the return flight. Traffic was transmitted on a common long-range reconnaissance frequency. Reports of sightings, which were encoded in the Air Force Code, Naval Section, could be immediately read by the Luftwaffe SIF, and made possible the warning of German submarines through the appropriate

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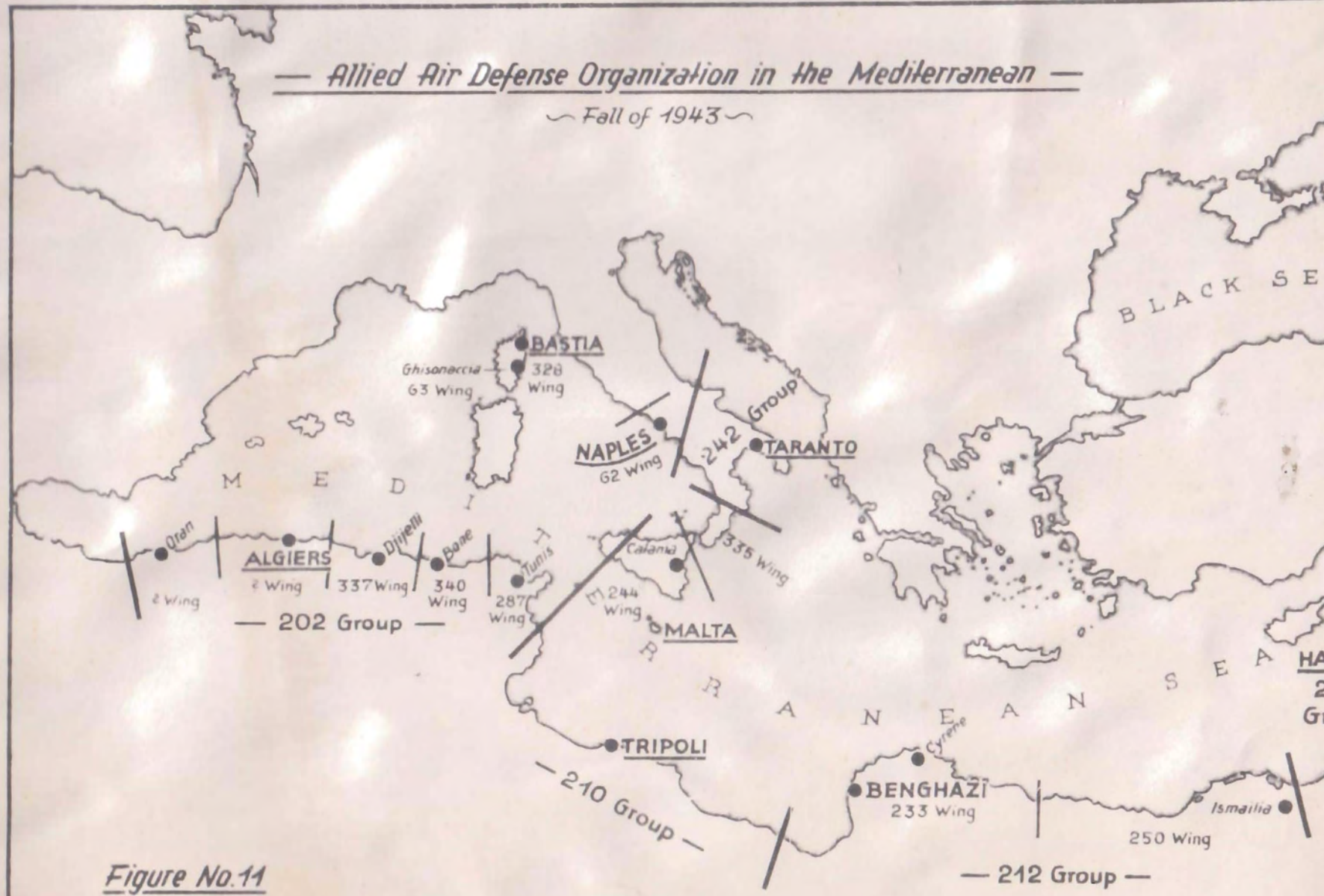


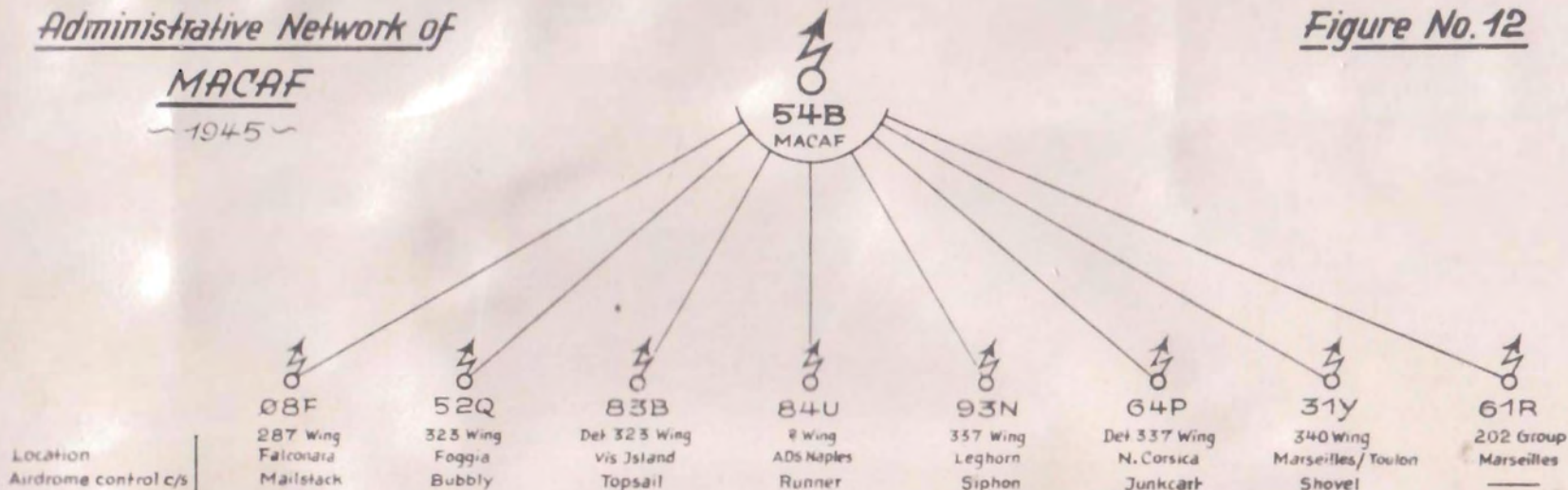
Figure No.11

Administrative Network of

MACAF

~ 1945 ~

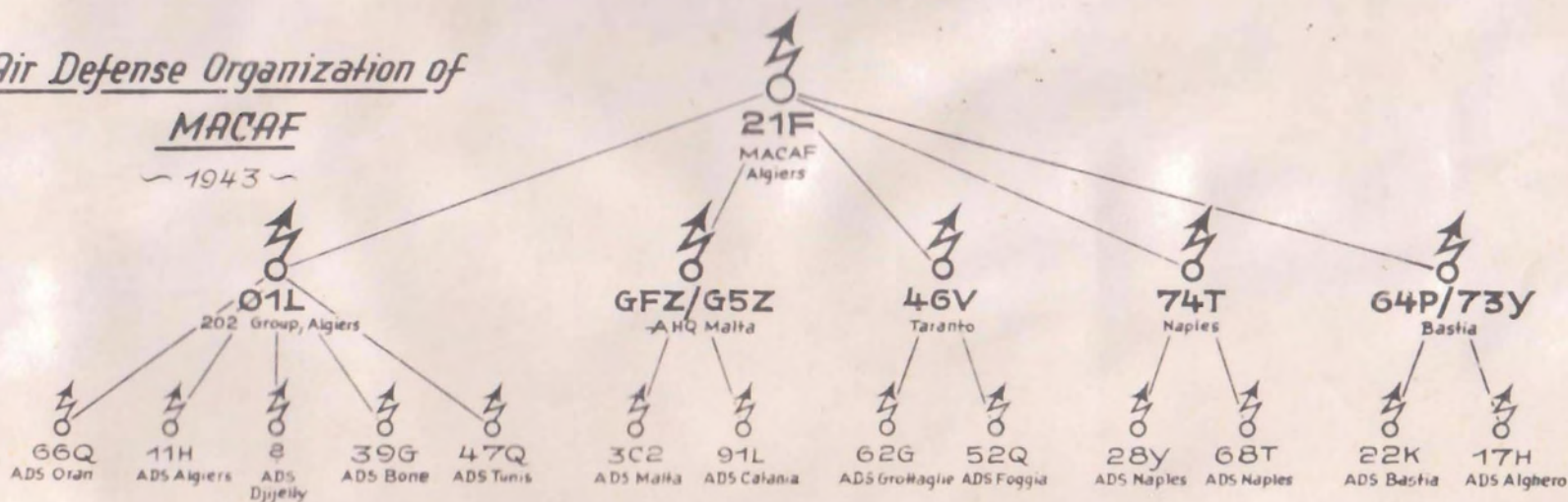
Figure No. 12



Air Defense Organization of

MACAF

~ 1943 ~



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naval headquarters. The constant use of individual aircraft letters permitted, just as in the case of 205 Bomber Group, the identification of those aircraft participating in missions, despite the later-adopted procedure of changing operational call-signs at 1400 hours daily. The strength of the Gibraltar-based reconnaissance aircraft increased slowly. When first monitored, in January 1941, it was probably no more than twenty aircraft; by the middle of 1942, it had already increased to three squadrons. Several weeks before the Allied landings in North Africa, a considerable reinforcement took place, which involved the ferrying of new squadrons from England. After the occupation of North Africa two squadrons of the group were transferred to Agadir (western coast of Marocco), while the group headquarters itself moved to Algiers. The other squadrons remained at Gibraltar, and their number of daily sorties, which had more than doubled during the period of the invasion, now returned to normal.

Similar to Gibraltar, Air Headquarters, Malta, had special reconnaissance units, which, in the beginning, were taken over from the Fleet Air Arm (700, 815 and 816 Fleet Air Arm Squadrons). They were equipped with Swordfish and Albacore aircraft, and carried out close reconnaissance missions, patrolling the waters around Malta. In the middle of 1942, they were relieved by Wellington units (69 General Recce Squadron; and two torpedo squadrons, 104 and 108 Bomber Squadrons), and transferred to the Middle East (Alexandria and Palestine). At the same time, Malta was reinforced with Beaufighters, so that following the failure of the second Luftwaffe attempt to reduce the fortress, in the fall of 1942, it could then take the offensive. In addition to escorting convoys through the Luftwaffe infested area of the central Mediter-

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anean, the main task of the Malta-based reconnaissance and bomber units was the disruption of German supply lines from Sicily and Southern Italy to ports in Tunisia and Tripoli.

Co-operation between Malta and Gibraltar, as revealed through the use of common reconnaissance frequencies, was excellent. The Malta units also used the Air Force Code, and the Luftwaffe SIS availed itself of these intercepted messages to alert German shipping in the central Mediterranean.

2. The Coastal Command in the Western Mediterranean.

After the Allied landings in North Africa, a coastal command, (North-west African Coastal Air Force), for the protection of the western Mediterranean, including Gibraltar, was created, with its headquarters in Algiers. It undertook to protect the Allied shipping lanes during the African campaign.

For this purpose large air bases for long-range and coastal reconnaissance aircraft were prepared in Casablanca, Agadir, Dakar and Freetown, for the protection of the entire coast line. With the creation of the Mediterranean coastal command (NACAF), and the equipping of its aircraft with the newly-developed anti-submarine vector (ASV), the German submarine activity in the central Atlantic, until then very successful, received a lethal blow.

The NACAF was also responsible for the protection of the African interior, insofar as it was occupied by Allied troops. The creation of air defense zones, however, only assumed final form when the Mediterranean Allied Coastal Air Force (MACAF) was established, following the Salerno landing.

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3. The Mediterranean Allied Coastal Air Force, MACAF. (See Figures No. 11 and 12)

a) Organization and Functions.

MACAF, whose headquarters was first in Algiers, and was later moved to Caserta, was supreme in command over all coastal reconnaissance, coastal bomber and fighter units, together with their ground organizations, in the western and central Mediterranean. It consisted of:

- 202 Group (RAF) in Algiers
- AHQ Malta (RAF)
- 62nd Fighter Wing (12th USAAF)
- 63rd Fighter Wing (12th USAAF)
- 242 Group (RAF)

All Allied occupied territory was divided into air defense zones and sectors. The following was the organization in November, 1943 (call-signs are indicated in parentheses):

HQ MACAF in Algiers (21F)

Air Defense Zone, Northwest Africa - 202 Group in Algiers - (QLL)

- Air Defense Sector, Oran - ? Wing (66Q)
- Air Defense Sector, Algiers - ? Wing (11H)
- Air Defense Sector, Djijelli - 337 Wing (?)
- Air Defense Sector, Bone - 340 Wing (39G)
- Air Defense Sector, Tunis-West Sicily - 287 Wing (47Q)

Air Defense Zone, Malta/Sicily - AHQ Malta (GFZ/G5Z)

Air Defense Sector, Malta - 248 Wing (3CZ)

Air Defense Sector, Sicily/Calabria - 335 Wing (91L)

Air Defense Zone, East Italy - 242 Group in Taranto (46V)

Air Defense Sector, Grottaglie - 286 Wing (62G)

Air Defense Sector, Foggia/Vis - 323 Wing (Foggia 52Q, Vis 83B)

Air Defense Zone, West Italy - 62nd Fighter Wing in Naples (74T)

Air Defense Sector, Naples - Two Groups of 62nd Fi.Wing (28Y/68T)

Air Defense Zone, Corsica-Sardinia - 63rd Fi.Wing in Bastia (64P/73Y)

Air Defense Sector, Corsica - 63rd Fi.Wing (22K)

Air Defense Sector, Sardinia - 328 Wing (RAF) in Alghero (17H)

b) Operations.

The installation of ASV in all long-range reconnaissance aircraft, made possible extended reconnaissance by both day and night in the Mediterranean, which, from the beginning of 1943 on, was dominated by the Allied air forces. With this device, the reconnaissance aircraft were able to protect the convoy routes, so vital to the supply of the Italian Front, against German submarines, and to continue attacks on German shipping, and harbors used by the Wehrmacht. To limit operational radio traffic to a minimum, each squadron was assigned fixed patrol areas. However, thanks to the prolific point-to-point traffic, organization, strength and missions of the reconnaissance units were precisely

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known. The Luftwaffe SIS had devoted virtually an entire company (25 receivers) to monitoring them. The sinking of the Italian battleship Roma was credited to the alertness of this company.

For the protection of the Allied hinterland, and for controlling Allied night fighters in defense against German night bomber attacks on convoys or upon land objectives, and extensive radar organization was built up, which likewise fell under the command of MACAF. Its fighter control stations vectored the fighters onto approaching German reconnaissance and bomber aircraft, and controlled night fighters on their patrol flights. By means of thorough monitoring of the networks of the Allied radar organization, and the prompt decoding of the abbreviated messages, the SIS was able to develop, as a countermeasure, a fighter warning service, through which intelligence from these intercepted messages was immediately transmitted to the imperilled German aircraft on their tactical frequency.

During the landing operations in southern France, 202 Group disappeared from MACAF networks; from its close co-operation with the tactical fighter units, its temporary attachment to MATAF was indicated. After the Allied landing in southern France, it took over the Southern France Air Defense Zone, with its headquarters in Marseilles. With the decline of the Luftwaffe, diminishing of submarine activity in the Mediterranean, and the curtailment of shipping along the coast line still under the control of the Germans, MACAF lost most of its original importance. Toward the end of 1944, the air defense zones were dissolved, and the air defense sectors subordinated directly to MACAF. AHQ Malta became primarily an administrative and supply headquarters,

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directly subordinate to MAAF. 248 Wing in Malta, and 286 Wing in Grottaglie, were dissolved. 335 Wing moved from Catania to Naples, and, in the spring of 1945, was withdrawn from MACAF and assigned to the RAF Transport Command. The 63rd Fighter Wing (12th USAAF), and 328 Wing, RAF, were transferred to Great Britain, while the 62nd Fighter Wing (12th USAAF), after giving up its air defense sector to 335 Wing, RAF, moved to Leghorn. Here it organized a radar reporting system for the newly-activated XXII Tactical Air Command. MACAF became less and less of a tactical organization; in the last months of the war it even turned over its night fighters to MATAF.

c) Conclusions.

The terrain features in the Mediterranean theatre, which were so different from those of the West, caused MACAF to rely much more extensively upon radio communication than did the RAF Coastal Command. The SIS profited by this situation; intercept stations in Spain, France, and Italy kept the frequencies of MACAF under continuous surveillance, with the result that the identification of its very complex ground organization caused no difficulties. Messages intercepted from the air-to-ground traffic were read immediately, and prompt countermeasures taken, since the cipher systems of the Allied long-range reconnaissance in the South, with very few exceptions (special Syko cards), were similar to those in the West. Co-operation with the Navy, and with other air force combat units was especially good in reconnaissance matters. MACAF distinguished itself, especially in the first phase of the war, in the protection it afforded to Allied convoys, and in its struggle to sever the German supply line to Africa; in its latter effort, MACAF was greatly aided by the incessant duplicity of Italian naval headquarters. The Luftwaffe SIS recognized

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the importance of MACAF, and allotted to the coverage of its radio traffic not only a large proportion of its available W/T receivers, but also its most experienced and best evaluation personnel. Through the intelligence it derived from the MACAF radio and radar reporting networks, the SIS was ever able to furnish the German Command with a precise picture of the Organization and operations of MACAF.

4. Special RAF Headquarters.

a) AHQ Gibraltar.

Before the landing of the Allies in North Africa, the real task of the Luftwaffe SIS in the western Mediterranean, besides the interception of traffic from Malta, was the monitoring of Gibraltar, Britain's gateway to the Mediterranean and the Middle East. There resulted an almost flawless picture, not only of reconnaissance activity in the western Mediterranean and the Atlantic, but also of the entire transport service between the British Isles and the North African theatre.

aa) Reconnaissance.

There were regularly revealed from the radio traffic:

Number of reconnaissance missions flown;
Reports of sightings of submarines and other shipping, reports of aircraft damage, weather reports, and special reports;
Areas reconnoitered;
Homing and landing of aircraft.

Convoy activity and shipping routes could be deduced from sudden changes in the stress of reconnaissance.

bb) Courier and Transport Service.

Until 1942, ETA and ETD (estimated time of arrival, and estimated time of departure) messages transmitted from airfields in southern England to

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Gibraltar, and enciphered in four-figure code, could be read. There could be determined from these messages, the type, number and ETA of transport aircraft flying to Gibraltar. After the additive book for enciphering these messages was changed, they could no longer be read.

The air-to-ground traffic of courier and transport aircraft, from 1942 on, was the only source of intelligence concerning these aircraft. It contained weather reports of the Gibraltar area as requested by the aircraft, homing traffic previous to landing, and, in rare cases, plain text messages in which aircraft type and ETA were given. It was sometimes difficult owing to the radio discipline of the experienced crews to distinguish between outward and return flights.

In spite of continuous refinement in the use of call-signs, the courier and transport aircraft flying between Great Britain and the Middle East were monitored with surprising success. In the beginning the aircraft used their operational call-signs during the whole of a flight from England to the Middle East, and occasionally to the Far East, which made it possible to track them to their destination. Later they changed call-signs with every intermediate landing. Nevertheless, a statistical study of all landing reports at the known airfields permitted a check on all aircraft movements from Great Britain to the Mediterranean to be maintained.

cc) Ferry Service.

The ferried aircraft used the courier and transport frequencies for their radio traffic. However, their radio discipline was not on a par with the latter, owing to their unfamiliarity with the routes flown. Both transport

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aircraft, and those ferried, used call-signs which changed daily, but which were drawn, however, from different call-sign lists. Experienced traffic analysts were usually able to distinguish between these two types of flights, since there was a tendency for the call-signs of transport aircraft to be used recurrently at irregular intervals. Ferried aircraft as a rule flew in small formations. Sometimes, however, flights in squadron strength were made, in which case each aircraft engaged in homing traffic independently. Thus, movements to and from the Middle East were clearly reflected in the radio traffic.

The greatest value was placed on the interception of this traffic, especially since, at the beginning of the war in the Mediterranean, the route England-Gibraltar-Malta-Egypt was the only route for ferrying bombers to the Middle East. In the matter of intelligence, on the aircraft replacement rate, the German Command in the Mediterranean was better informed than it was in the western theater. The Luftwaffe in the West was dependent upon agent's reports for its intelligence on the production rate of the British aircraft industry, since ferry flights from factories to airfields in Great Britain involved no radio traffic. Owing to the unreliability of agent's reports, the British aircraft production capacity, during the critical years of the war, was considerably underestimated.

b) AHQ Malta.

Both in April, 1942, and in the fall of the same year, the eyes of the world were turned on Malta, as the Luftwaffe vented its full fury upon the beleaguered island. When the tide of war in Africa turned against the Germans, and supply convoys and aircraft carriers brought succor to the besieged fortress, Malta began to play a prominent part in Allied offensive operations. The island

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boasted renowned fighter squadrons which harassed the German fighters remaining in Sicily, while Wellington torpedo bombers inflicted heavy losses on the ships supplying the German forces in Africa. Approximately one month before the Allied landing in Sicily, the number of aircraft on the Maltese airfields increased fourfold. (Approximately 400 fighters instead of the customary 120). When the scene of action finally shifted to the Italian mainland, Malta became primarily a supply base.

Clearly states the case for SIS. Commander must be held to rely on SIS.

➤ It is believed that in the case of Malta, more than any other, the Luftwaffe was culpable in neglecting opportunities that presented themselves. For example, during the spring and summer of 1942, the Chi-Stelle frequently offered the suggestion that German fighters or night fighters be used against the unarmed transport and ferried aircraft which were making intermediate landings on Malta, and whose angle of approach to the island, and ETA, were accurately known by the SIS. This undoubtedly would have resulted in the destruction of these aircraft. In spite of reports which were prepared, setting forth these exact data, no action was taken. This indifference to strategic signal intelligence was even demonstrated by the High Command of the Wehrmacht, when, at the end of each of the Luftwaffe's offensives the SIS reported that all air and flak resistance on Malta had been obliterated; and still no landing ensued.

F. The Balkan Air Force (BAF). (See Figures No. 1, and 13 to 18 inclusive)

1. General.

The Allies perceived the weakness of the German position in the Balkans relatively early. This weakness was conditioned by:

- a) The topography of the region, which, together with a poor communications system, made it impossible to occupy and govern with the forces available.

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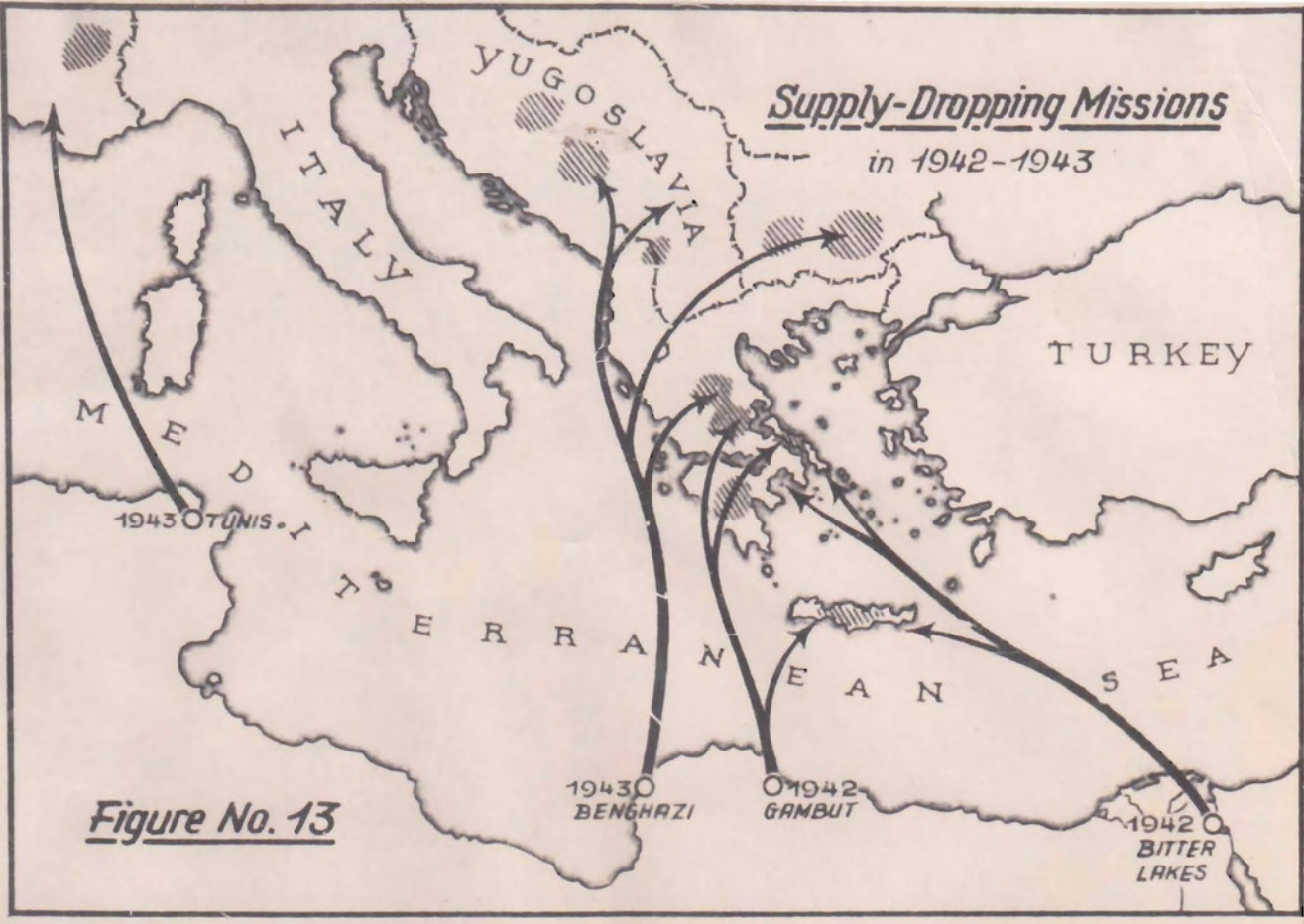


Figure No. 13

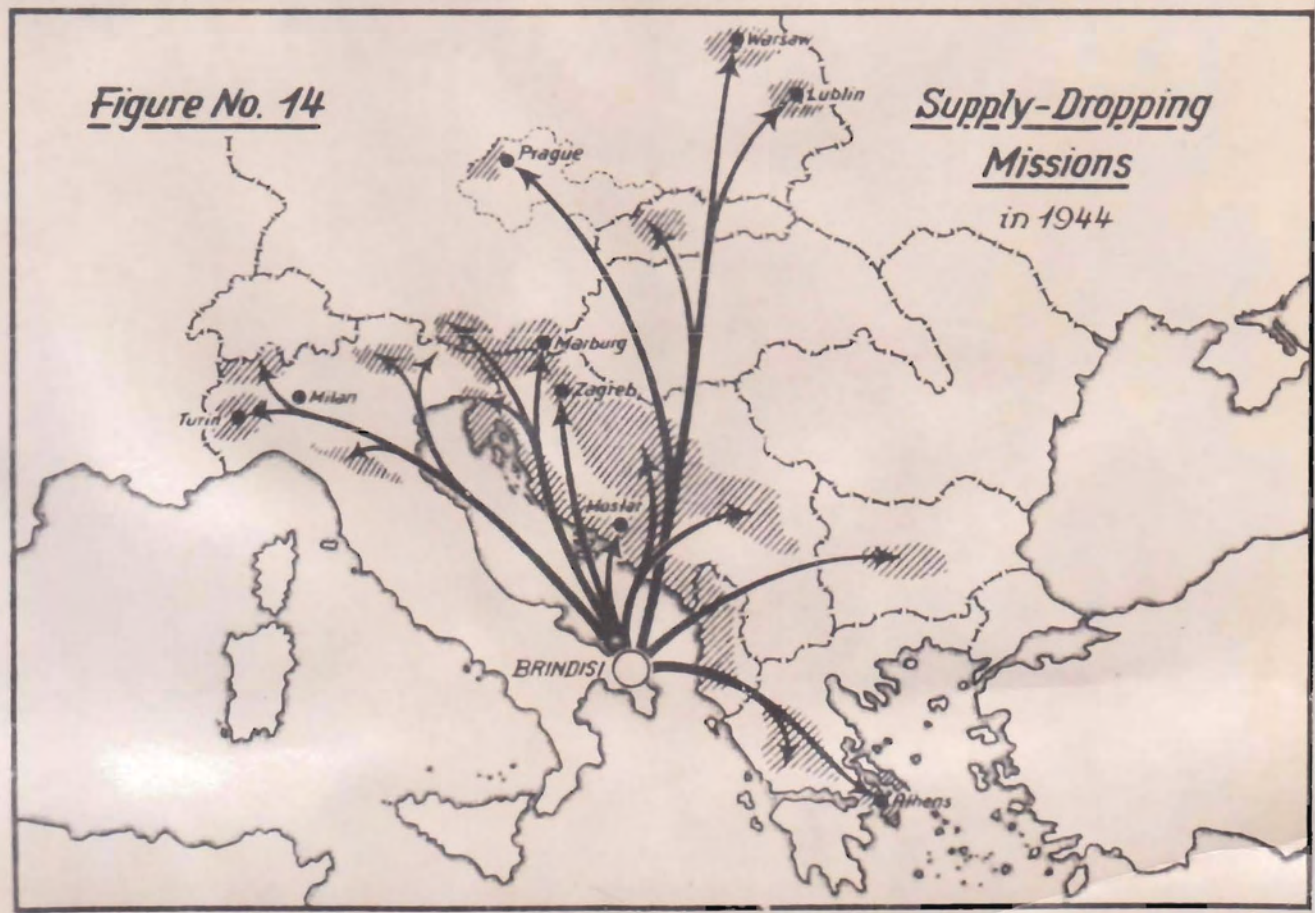


Figure No. 14

Organization of BAF

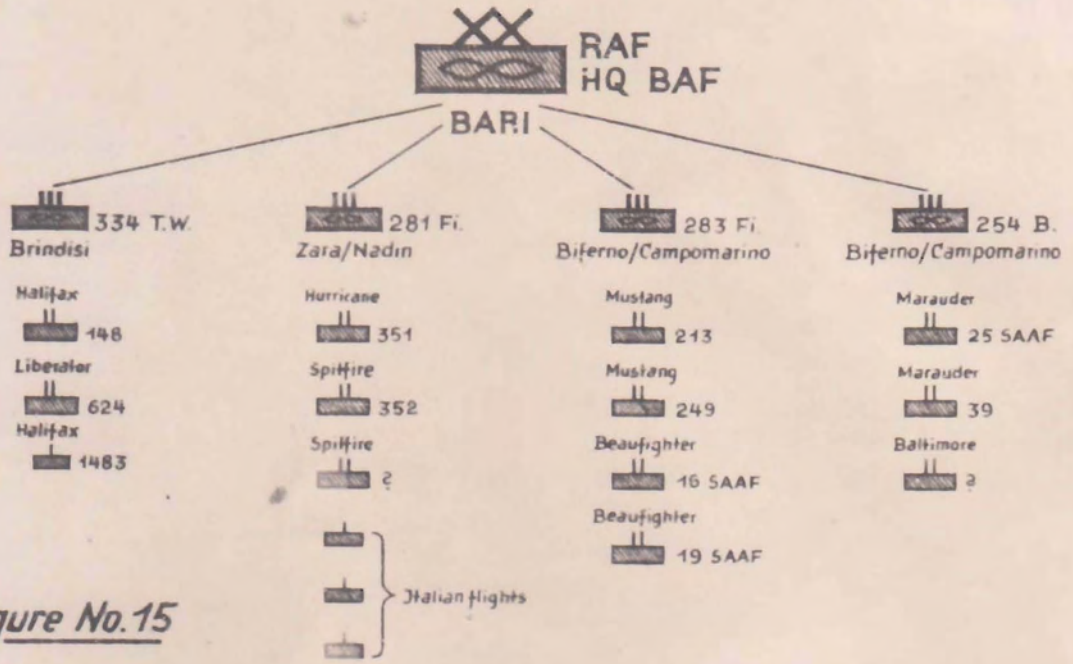


Figure No.15

Liaison with Other Headquarters

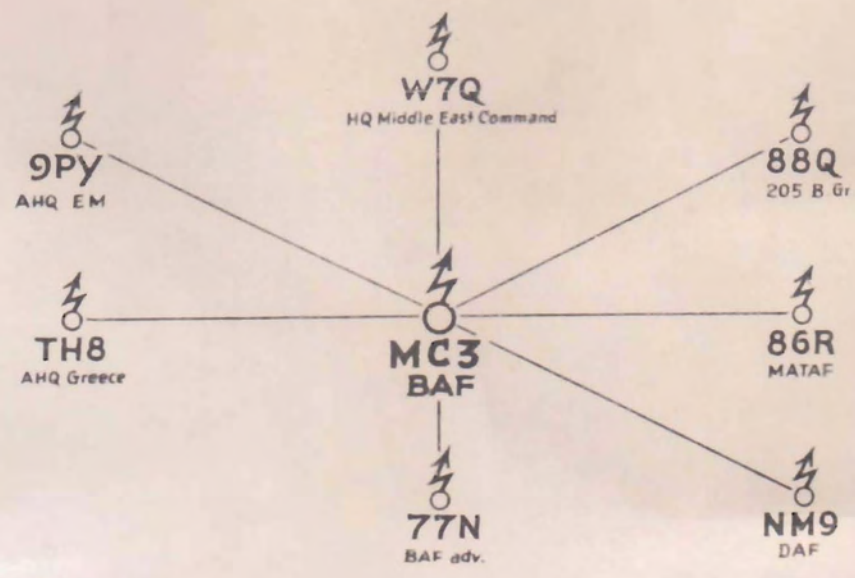


Figure No.16

Geographical Locations
of BAF Headquarters
and Airfields

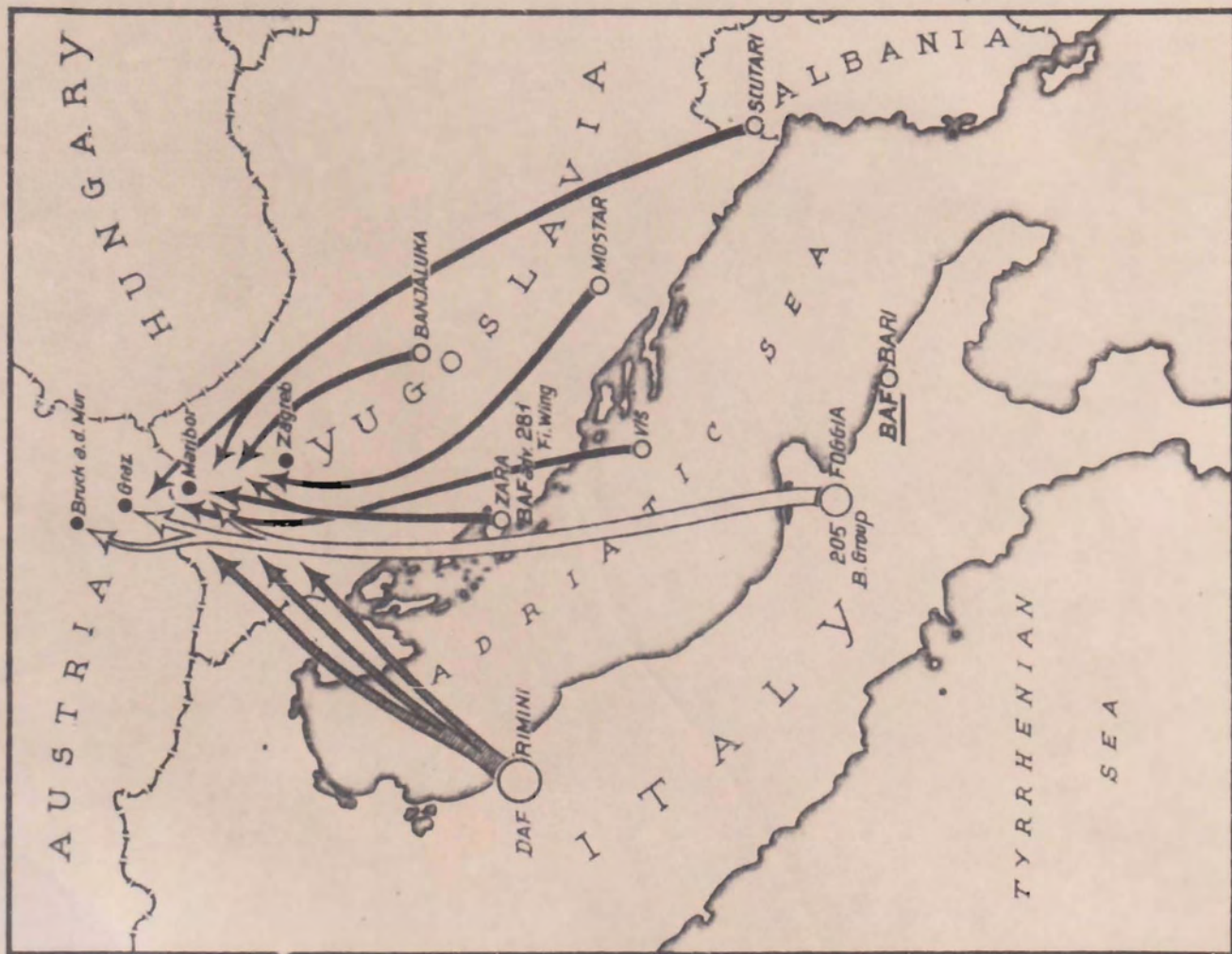
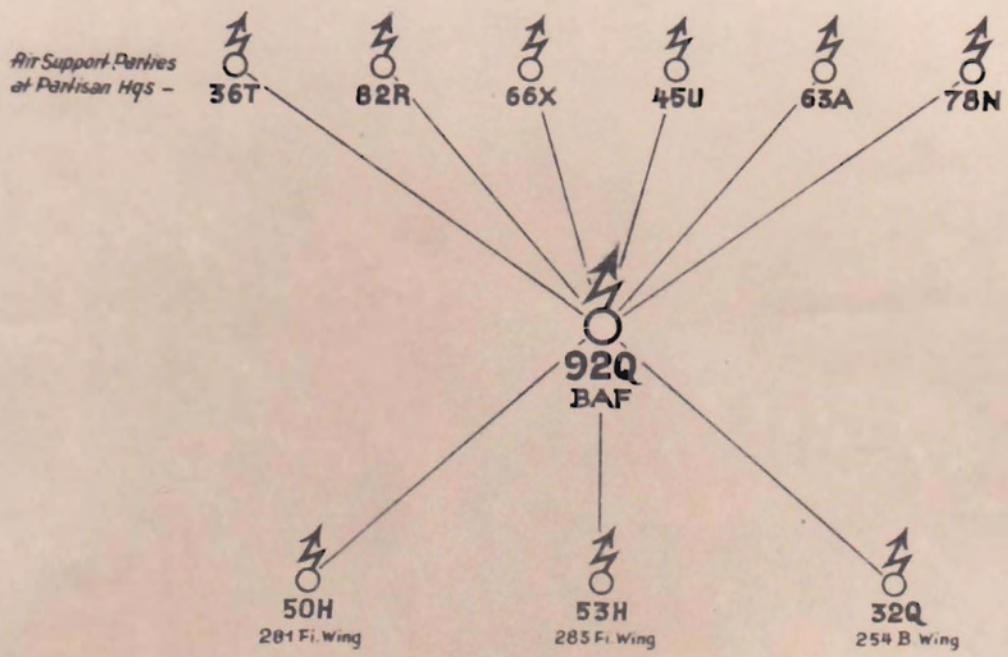


Figure No. 17

Air Support Networks
BAF



VHF R/T Callsigns of BAF

	334 T Wing	281 Fi. Wing	283 Fi Wing	254 B. Wing	Lissa Island
Airbase Controls:	<u>ARISE</u>	<u>FORTHWITH</u>	<u>WATCHBOX</u>	<u>WATCHBOX</u>	Landing field
					<u>TOPSAIL</u>
R/T Callsigns	624 Sq. <u>SNAILPIECE</u>	351 Sq. <u>COALFIELD</u> <u>JUJAR</u>	213 Sq. <u>LATELUNCH</u>		
R/T Callsigns		352 Sq. <u>GREENWOOD</u> <u>DINKY</u>	249 Sq. <u>EARNIE</u>		
R/T Callsigns		2 Sq. <u>RANDY</u>	16 SAAF Sq. <u>HIGHJACK</u>		
R/T Callsigns		Italian flights <u>LEO</u> <u>DARDO</u> <u>PICCA</u>	19 SAAF Sq. <u>GORGEOUS</u>		

Figure No.18

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- b) The political conditions in the Balkans, which, from time immemorial, had made these countries the tinder box of Europe, and which had continually led to the formation of organized and politically potent factions.
- c) The hatred of the majority of the Balkan peoples for Italy, which in time destroyed the previous friendly feeling toward Germany.

Despite a knowledge of these conditions, the Allies did not attempt a landing in the Balkans. They decided rather to eliminate gradually from the war, first Italy, and then Germany's remaining allies. Nevertheless, the British especially expended considerable effort in order to undermine the German position in Greece and Yugoslavia. They saw here the opportunity to achieve conclusive results with comparatively slight resources, and without the withdrawal of troops from other theatres of war. This was done by organizing and currently supplying the partisans. After a regular Yugoslav army of liberation under Tito had been created, the final step was the formation of the Balkan Air Force to provide air support for this army.

2. Supplying the Partisans, 1942-1944.

a) Organization

Toward the end of 1942, the RAF Middle East command, with headquarters in Cairo, already had two or three C-47 and B-24 squadrons, which at first from bases in Lower Egypt, and later from the Gambut area, flew supply-dropping missions by night to partisans in Crete and Euboea, as well as on the Grecian mainland. Almost every night six to ten aircraft were airborne to drop arms, ammunition, clothing, food, medicinal supplies and training personnel.

By the middle of 1943, partisan activity had already extended over so wide a territory that it was necessary to transfer some supply-dropping

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aircraft from the Gambut area to Tocra (148 Bomber Squadron), to supply units in Jugoslavia, while the aircraft based in Gambut supplied the Grecian area. Those taking off from Tocra chose the shorter route along the western coast of Greece to reach their dropping areas. Developments in France at this time resulted in the transfer of one squadron to the Tunis area, from where, likewise by night, it supplied partisans in Provence and the Riviera (See Figure No. 13). With the conquest of southern Italy by the Allies, the supply-dropping units moved to Bari-Brindisi-Teroli area. There, with other newly-activated squadrons, they were merged into the 334 Transport Wing, comprising:

148 Bomber Squadron	624 Squadron
123 B.T. Squadron	1483 Flight

The advantage of this new airfield area was that, on the one hand, it lay nearer to the great Allied supply base at Naples, and, on the other, that the route to the dropping zones, which now included all of the Balkans, was considerably shortened. In the beginning of 1944, the number of B-24's and Halifaxes was increased to 60-70 aircraft, which with the decline of German defensive strength, even flew daylight missions. Units of 205 Bomber Group, RAF, also joined in these daylight and night operations (See Figure No. 14).

b) Operations and Tactics.

The direction of supply-dropping activities, which was centrally controlled from Cairo, was founded, from the beginning, on requests transmitted to a control station in Cairo by British liaison officers with the individual partisan groups. As early as the summer of 1943 Jugoslavia was covered with a network of forty-five such radio stations. The messages transmitted by these

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stations were not intercepted by the Luftwaffe SIS, but by the Radio Defense Corps. The messages fell into a pattern and could be deciphered and read. Copies of these messages were later placed at the disposal of the SIS. They contained either requests from the partisans to the British headquarters in Cairo, or reports of their activity. The requests for assistance indicated:

Type and quantity of supplies requested;

Dropping zone and time;

Target marking and weather.

If Cairo approved the request, a return message was transmitted giving the number and type of the supply-dropping aircraft being dispatched, their time and place of take-off, as well as their estimated time over the dropping zone. These messages also could be read by the Radio Defense Corps.

Co-operation between the Radio Defense Corps and the SIS was very close in matters relating to partisan-dupplying activities. In addition to signal intelligence, captured documents were exchanged by these two signal organizations, which were often very productive and illuminating. Thus, with a very small expenditure of personnel and equipment, and extremely complete and detailed picture was obtained concerning the supplying of the partisans, as well as the activity of the British liaison officers with the individual guerilla headquarters.

The take-off of supply-dropping aircraft from North African airfields took place between 1900 and 2100 hours. Like 205 Bomber Group, they preferred moonlight nights. The approach flight to the various dropping areas was made in small formations of three or four aircraft, and radio silence

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generally prevailed. Upon reaching the dropping zone, the aircraft went into their approach run one at a time, and dropped their loads. The aircraft were guided to the dropping areas by bonfires built on mountain tops along the route, and by lights in the dropping zone itself. Moreover, instructions and directions for releasing the supply containers were given by pyrotechnic signals. Actual landings in partisan territory took place only after the middle of 1943, when airfields suitable for C-47's and B-24's were constructed in these areas.

A reliable source of early warning to the SIS was the tuning traffic engaged in shortly before take-off. Unfortunately, only infrequent tactical use could be made of this information, since the weak Luftwaffe forces in the Balkans were already overburdened with the protection of the supply lines to the island garrisons. In the second half of 1943, the more important dropping zones were equipped with radio beacons (Eureka), which facilitated the location of the dropping zones by the aircraft. These VHF beacons were continually monitored and D/F-ed by the SIS, and by this means the concentrations of partisan activity were noted. By experience it was known that the dropping zones marked the vicinity of large partisan headquarters, the engaging of which was the particular task of the Army. The Luftwaffe's only concern in these matters was supplying the German Army during large-scale operations, and providing air support. Therefore, in this field the SIS was limited to ascertaining the order of battle and strength of the supply-dropping units. Moreover, the constant use of aircraft recognition letters, and a separate supply-dropping frequency permitted current estimates of effective and operational strengths.

OSS was very interested in this type of information.

3. Air Support, 1944-1945.a) Organization and Functions.

By the beginning of 1944, guerilla activity had reached such proportions that Tito's subordinate commanders already felt strong enough to engage German detachments in open combat. They had already captured villages, and even towns, and held large geographical areas; by systematically severing the German supply lines they caused the Wehrmacht much embarrassment. The increase in their offensive activity presented the Allies with the necessity of furnishing supplies for what were, in the main, local actions; and in the course of the engagements themselves, to provide air support for the partisans. For this latter purpose, new units, in addition to 334 Transport Wing, were activated. They consisted of:

281 Fighter Wing

254 Bomber Wing

283 Fighter Wing

Units of the Italian Allied Air Force

The controlling of the supply and air support operations was centralized in the hands of the Balkan Air Force in Bari, established in the summer of 1944, which had under its command entire units devoted to the campaign in the Balkans. BAF itself was administratively subordinate to HQ. RAF, Middle East, and operationally to MAAF (See Figures No. 1, 15 and 16).

The steady advances of the partisans toward the north and northwest in the wake of German withdrawals in the last months of 1944, made it necessary for BAF to move its fighter units forward. Thus, advanced and intermediate landing fields on the island of Vis, in Skutari, Banjaluka and Mostar were used. 281 Fighter Wing actually moved to Zara/Nadin. At the same time BAF set up an advanced headquarters in Zara (See Figure No. 17).

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In the last months of the war, upon request from BAF, units of DAF (as for example 239 Wing, which had previously sought targets of opportunity across the Adriatic in Dalmatia), and of 205 Bomber Group, flew regular missions to the Balkans without any change resulting in their chain of command. Only in the point-to-point networks did this rather close co-ordination between BAF and MATAF, DAF and 205 Group, manifest itself. BAF also lent assistance to AHQ Greece.

b) Operations and Tactics.

The air support networks of BAF were very similarly organized to those of MATAF, with the exception that, in the case of BAF, the role of the air support parties was taken over by British liaison officers with the individual partisan headquarters (See Figure No. 18). Since, however, the airfields of BAF lay far to the rear, and since in the Balkans an actual front, such as that in Italy, scarcely existed, procedures which resulted in immediate response on the part of the supporting air forces (such as "Cabrank" and "Pineapple") could not be brought into play. For this reason tactics in the Balkans were essentially simple, and, in the main, fighter bombers sought targets of opportunity during patrol flights along the German supply routes and lines of communication. The monitoring of R/T traffic, owing to the distance separating the Luftwaffe SIS stations and the operational areas of the BAF fighter units, was possible only to a limited extent. Air support party messages, which were exchanged between the British liaison officers, BAF headquarters, and the wing headquarters, formed the main source of intelligence on their activity.

4. Conclusions.

In its policy, which was aimed at causing a maximum of difficulty to the Germans within their occupied territory, with a minimum expenditure; in

the way in which it turned the political ambitions of others to its own advantage, leaving them to bear the brunt of the suffering, BAF was a typically British organization. Its successes were by no means slight. As early as 1942, the British, by threatening to discontinue their supply-dropping missions, could prevent quarrels from breaking out among the partisans in Crete, and force them to resolve their differences. By their control of the source of supplies, they assured to themselves a dominant position of influence in the unstable affairs of the Balkans. Thus, the dropping of Michailovich, and the support rendered to Tito at the instigation of Moscow, practically sealed the doom of the former. Moreover, the increased threat which the partisans presented, owing to the support they received from BAF, forced the Germans to maintain considerably more troops in the Balkans than would have otherwise been necessary, and prevented their employment on other fronts.

Last but not least, BAF greatly hindered the work of the numerous Luftwaffe SIS stations situated on the Adriatic coast by blocking the German supply lines, and severing their communication with the Fatherland. Here, more frequently than elsewhere, the man on the receiver was interrupted in his work, in order to protect his out-station against a sudden partisan assault.

G. HQ Greece.

1. The Greek Air Force

At the time of the German campaign in Greece, in 1941, a Greek Air Force existed, equipped principally with French type aircraft. Owing to its inferiority in number of aircraft and personnel, it played but a paltry role in the contest.

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Because of its insignificance it was completely neglected by the Luftwaffe SIS. When their British allies were forced to abandon Greece and Crete, a number of Greek air crews fled with them to Lower Egypt, where, under RAF tutelage, they were retrained onto British type aircraft.

2. The Greek Squadrons in the Eastern Mediterranean.

After its retraining under the Middle East Command, the Greek personnel was formed into three squadrons. The 335 and 336 Fighter Squadrons were equipped with Hurricanes, and later Spitfires; the 13 Hellenic Bomber Squadron, with Blenheims, and later Baltimores. That the British obviously did not maintain too high a regard for the combat worth of these squadrons was evinced by the fact that they were used exclusively on defensive missions. The two fighter squadrons, stationed west of Marsa Matruh, flew patrols between Alexandria and Tobruk for practically the entire period of the war, while the 13 Hellenic Bomber Squadron, at first based in the Alexandria area, later likewise at Marsa Matruh, joined the fighters in defense of the coast. During one of the RAF low-level attacks on Crete in 1943, in which the Greek squadrons were allowed to participate, a considerable number of their aircraft was shot down by flak.

3. The Greek Air Force in Greece.

When the British landed in the Peloponnesus, in December 1944, and were forced to combat the spirited resistance of the ELAS forces, the Greek squadrons were called back to the Motherland to support the British ground forces. They formed the nucleus of Air Headquarters, Greece, which was set up in Athens. To them were added two RAF Spitfire squadrons; and these were temporarily assigned

a Beaufighter squadron from Benghazi (252 Fighter Squadron), and a Ventura squadron (459 Bomber Squadron). The coastal wing in Oran, which had meanwhile moved to southern Italy, took over the air defense of Greece. AHQ Greece, was subordinate to the Middle East Command in Cairo, and from January, 1945 on, maintained an advanced command post in Salonika.

4. Conclusions.

The W/T and R/T traffic of the three Greek squadrons was monitored by the Luftwaffe SIS in the eastern Mediterranean, so that their airfields, missions and strength were at all times known. Since their operations were confined to the defense only, this strategic intelligence sufficed.

H. HQ. RAF, Middle East. (See Figure No. 19)

The Middle East Command, which, under various names, remained the highest RAF headquarters in the eastern Mediterranean throughout the entire war, had its seat in Cairo. In addition to supply and administrative functions, it was responsible for the central planning and operations of all the RAF forces in this area. However, its subordinate headquarters and groups were allowed to retain a great amount of operational independence. The following units were under the command of HQ. RAF, Middle East, at one time or another:

AHQ Western Desert

201 Naval Co-operation Group

205 Bomber Group

AHQ. Iraq-Iran

HQ. Aden

All Air Defense and Supply Units in the Middle East.

Organization of AHQ Middle East—

~ 1941 ~

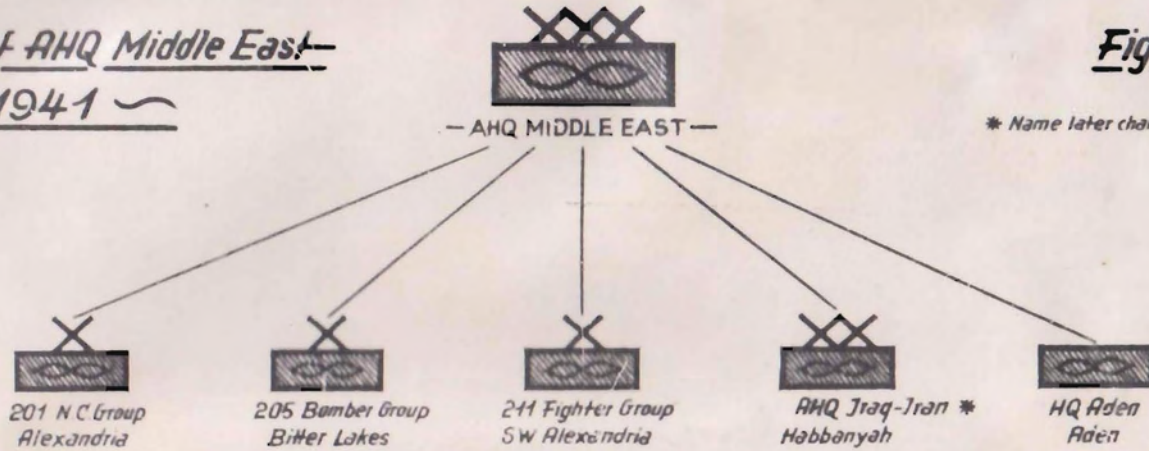
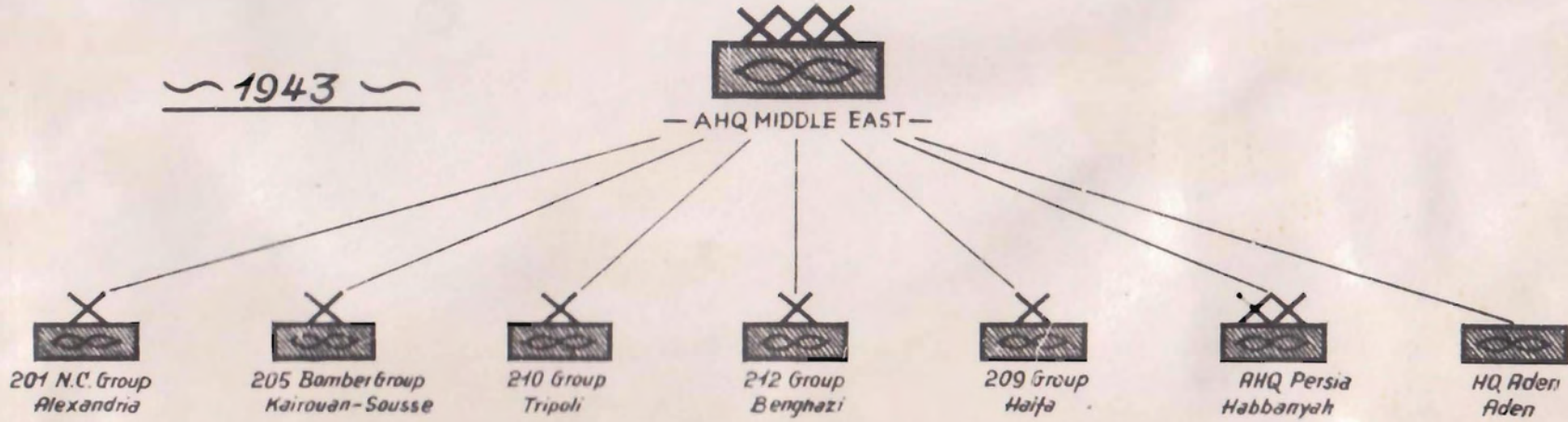


Figure No. 19

* Name later changed to AHQ Persia

- 67a -

~ 1943 ~



The point-to-point networks of HQ. RAF, ME, and its subordinate Headquarters were continuously monitored. The decoding of intercepted messages, up to 1942, permitted a complete insight into the affairs of the headquarters. Later, the organization and liaison between the individual headquarters was determined through message preambles, delivery groups, and depth of traffic. By means of an air-to-ground intercept company, and part of a point-to-point intercept company, the SIS was able to build up an almost faultless picture of the order of battle, strength and operations of the units of HQ-RAF, ME, even down to individual squadrons and flights.

1. AHQ Western Desert.

During the Greek campaign in April 1941, two or three RAF fighter squadrons (one of which was 73 Fighter Squadron) were stationed on the airfields around Athens. When the British evacuated Greece, they were withdrawn to an area southwest of Alexandria. In the course of 1941, these units, which were the nucleus of the RAF fighter arm in the Middle East, were continually reinforced by aircraft ferried from England. Gradually wings were created (233, 239 and 244 Fighter Wings) which were finally assembled into 211 Fighter Group. The task of this group was air protection and support of the British Eighth Army. Therefore, the airfields of the group lay in the vicinity of the front. When the British attained numerical superiority over the German Luftwaffe, which was brought about essentially by the steady stream of P-40's arriving from America, they were able to detail more and more fighters for air support purposes, and for low-level attacks on German supply lines. In this manner 211 Group developed those principles and techniques which were later to lead to the creation of a tactical air force. In the spring of 1942, its squadrons, which until then had

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been equipped with Hurricanes, were re-equipped with Spitfires, P-40's, and other newer aircraft types; at the same time the R/T radio equipment within the aircraft was changed from HF to VHF. After the advance of the Eighth Army through Cyrenaica, the 212 Fighter Group was assigned to AHQ Western Desert for the protection of rear supply installations; this group had wings in Benghazi and Tobruk. During the Tunisian campaign, AHQ Western Desert was dissolved; the units of 211 Group participated further in the Sicilian and Italian campaigns under the name of the Desert Air Force.

The units of AHQ Western Desert were monitored by R/T detachments in Africa. Its organization could be currently and exhaustively determined by the evaluation of air support messages. For the protection of German reconnaissance flights into those areas patrolled by RAF fighters, airborne R/T interceptors were assigned to Luftwaffe crews. These operators intercepted the R/T traffic of RAF fighters, and suggested appropriate evasive action to their own pilots.

2. 201 Naval Co-operation Group, Alexandria. (See Figure No. 20)

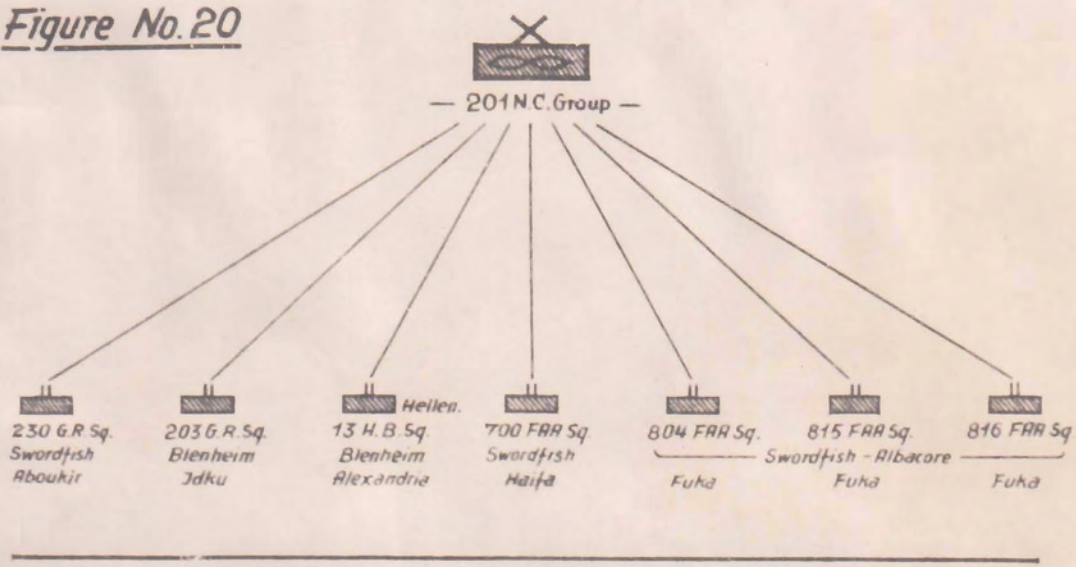
From the beginning, all over-water reconnaissance and bomber aircraft in the eastern Mediterranean were concentrated in this group. Its development during 1941-1945 allows of division into the following phases:

- a. The protection of the African-Levant coastal waters, while the Germans still retained air supremacy in the eastern Mediterranean (1941-1942).
- b. Relinquishing its defensive role, and with new equipment, as well as an increased number of squadrons, undertaking operations aimed at the control of the Aegean, and the coastal waters surrounding Greece; these included attacks on the German naval supply line to Crete, and on the Aegean islands (1942-1944).

Organization of 201 Naval Cooperation Group

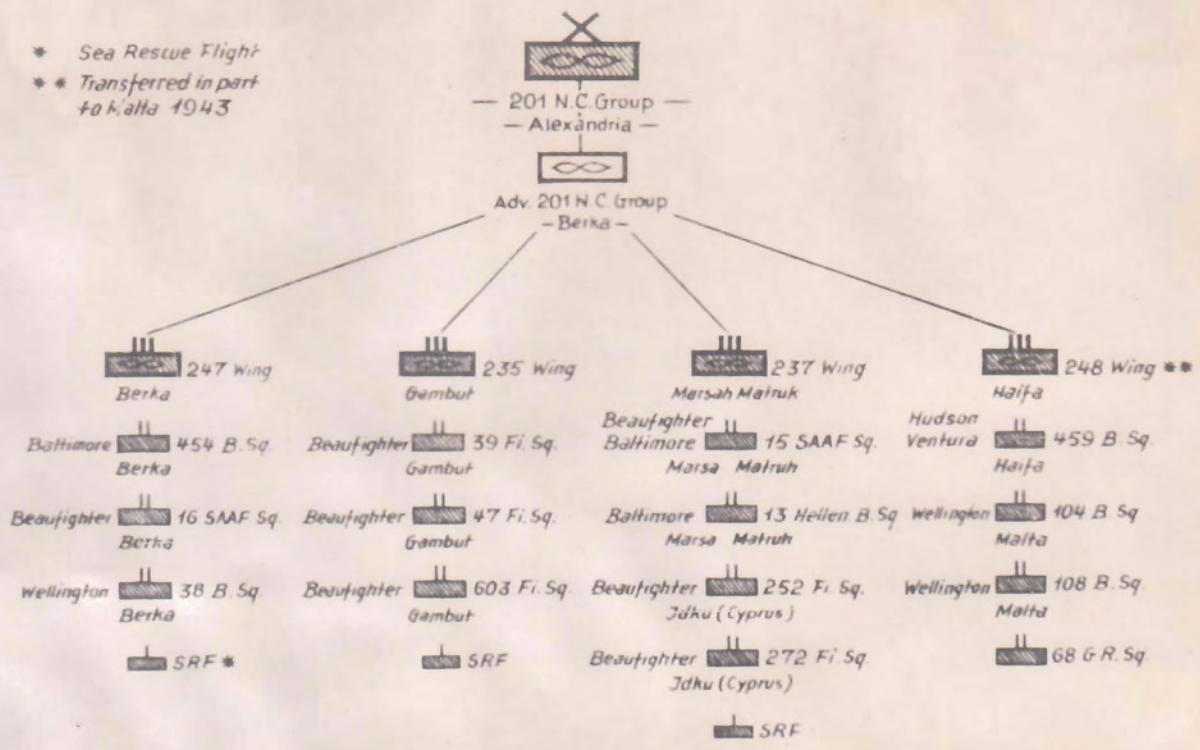
~ 1941/42 ~

Figure No. 20



~ Middle of 1944 ~

- * Sea Rescue Flight
- ** Transferred in part to Malta 1943



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c. The merger of the group headquarters with HQ. RAF, Middle East; the new headquarters planned and supervised all operations in the eastern Mediterranean, which was now completely dominated by the Allies (1944-1945).

a) Defensive Operations, 1941-1942.

After the Allied loss of Crete, in May 1941, there was stationed in Aboukir, the seaplane base of Alexandria, the 230 General Reconnaissance Squadron, which, with a total of seven or eight Sunderlands, carried out submarine reconnaissance over the water between Crete and the African mainland. Similar missions off the Levantine coast were flown by 203 Gen. Recce. Sq. from Idku, equipped with Blenheims. For closer-range reconnaissance there were available four Swordfish-Albacore squadrons of the Fleet Air Arm (700, 804, 815 and 816 Squadrons). The combat worth of these units, which were equipped with obsolete type aircraft, was not rated too highly; therefore, a reconnaissance of the Aegean could not be ventured by them. The total strength of reconnaissance aircraft, in the middle of 1942, was estimated by SIS at approximately eighty aircraft.

The interception and identification of radio traffic from the reconnaissance aircraft was relatively simple. The Sunderlands used fixed call-signs without individual aircraft letters. The Fleet Air Arm also was distinctly recognizable by its call-sign construction. Messages were encoded by the Naval Section of the Air Force Code, which could be read; but aircraft of the Fleet Air Arm, especially, sent many messages in the clear. The development of the squadrons was closely registered by the SIS. The 203 Gen. Recce. Squadron was re-equipped with Beauforts, and in 1943 was presumably transferred to the Near East. 230 Gen. Recce. Squadron received Beaufighters, and was transferred to the Red Sea area. The 13 Hellenic Squadron, which had accompanied the British in

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their withdrawal, was re-equipped with Baltimores, and its strength gradually increased from seven to fifteen aircraft. The squadrons of the Fleet Air Arm returned to England via Malta, where two of these squadrons were still observed in close-range reconnaissance activity in 1943.

b) Offensive Operations, 1942-1944.

The building up of the Allied air forces in the Mediterranean in the following years manifested itself also in the case of 201 NC Group, whose units were partly re-equipped with more modern types of aircraft, and partly transferred and replaced with fighter and bomber squadrons. Thus, in the first half of 1944, the group, with its four wings, presented an entirely different picture from that in the beginning (See Figure No. 20). The overall strength of aircraft on hand was estimated at this time at approximately 200. They had the following tasks:

- aa) Coastal reconnaissance of the African-Levantine coastal waters, from Misurata to Haifa, for the protection of Allied convoys. During the day they flew an average of fifteen to twenty sorties; at night an average of five. These missions were flown in reliefs (See Figure No. 21).
- bb) Long-range reconnaissance to observe German shipping movements off the west coast of Greece; reconnaissance of the Aegean and Dodecanese Islands by Baltimores of 454 Bomber Squadron.
- cc) Attacks on this shipping by Beaufighters of 235 and 237 Wings by day; and by Wellingtons of 38 Bomber Squadron by night.
- dd) Mining of the German shipping lanes in the Aegean by 38 Bomber Squadron.
- ee) Attacks on harbor installations in Greece, Crete, and the Dodecanese by Beaufighters during the day, and by 38 Squadron at night.

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- ff) Beaufighter attacks on German transport aircraft in the Aegean on their way to Crete and the Dodecanese (See Figure No. 22).
- gg) Air-sea rescue service in the eastern Mediterranean.

All the operations of the group were centrally controlled by the group headquarters in Alexandria, which was reflected in the signal intelligence picture. The group appeared as net control station on all air-ground frequencies. These frequencies were so allocated that, for example, all reconnaissance and bomber aircraft on missions used 6540/3460 kcs., short-range reconnaissance 6660/3925 kcs., and air-sea rescue 4535 kcs., regardless of the squadron to which they belonged. If shipping were sighted during reconnaissance missions, reports were not transmitted to the wings, but directly to the group headquarters, which thereupon rebroadcast them twice on the reconnaissance frequency. By virtue of the fact that all wings listened in on the group frequency, they were directly informed of all developments. The wings engaged in homing traffic only with their units. An exception existed in the case of 235 Fighter Wing, which occasionally directed its Beaufighters on missions.

The operations of 38 Bomber Squadron (247 Wing) were especially noteworthy. This unit comprised 24 Wellingtons, which were equipped with ASV. Their activities centered in the Aegean area where they mined German shipping lanes, attacked convoys with aerial torpedoes, and bombed harbor installations. Their attacks on German convoys were carried out primarily by night with the aid of their ASV. One or two of the Wellingtons usually functioned as "illuminators" during an attack. The Luftwaffe SIS was able to give advanced warning of this activity by intercepting the ASV pulses from the torpedo bombers during their approach flight. 38 Squadron was stationed in Berka (Benghazi), and toward the end of the war was transferred to Grottaglie, in southern Italy.

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The sea rescue service in the eastern Mediterranean was performed by the Wellingtons and Walruses of 294 Squadron, under direction of group headquarters located in Alexandria, and with the assistance of motor launches. Aircraft and hydroplane flights of the squadron were attached to the wings of 201 Group. Because of its ample clear-text traffic, the Allied sea rescue activities could be followed in all phases by the SIS. Even the motor launches used the sea rescue frequency, and, owing to a certain procedure on their part, provided the SIS with excellent early warning material.

At the time when 24 SAAF Bomber Squadron (Marauders) was based in the Gambut area, and was being used in offensive operations against Crete, the auxiliary launches, 18 and 25, were stationed in the harbor of Tobruk. If a Marauder attack were impending, at least one of the auxiliary launches would receive a 4-figure message, following which it would speed to a position between Crete and Tobruk in order to be in a location to render immediate assistance to any Marauder in distress.

c) Merger of HQ. 201 NC Group with HQ. RAF, ME.

In the summer of 1944, 201 NC Group was dissolved as a tactical unit, and its headquarters merged with the staff of HQ. RAF, ME. The withdrawal of the German forces from Greece resulted in complete inactivity for the individual squadrons of the Middle East Command. The greater portion of these squadrons were transferred to Italy; the remainder were, at least temporarily, transferred to Greece. Toward the end of the war the Middle East Command was monitored to a small degree only by the SIS, and then exclusively in its point-to-point networks, since the withdrawal of the VHF out-stations from the islands of Crete and Rhodes represented the loss of the last outposts in the eastern Mediterranean from which the fighter units could be monitored.

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3. AHQ.Iraq-Iran; RAF HQ, Aden.

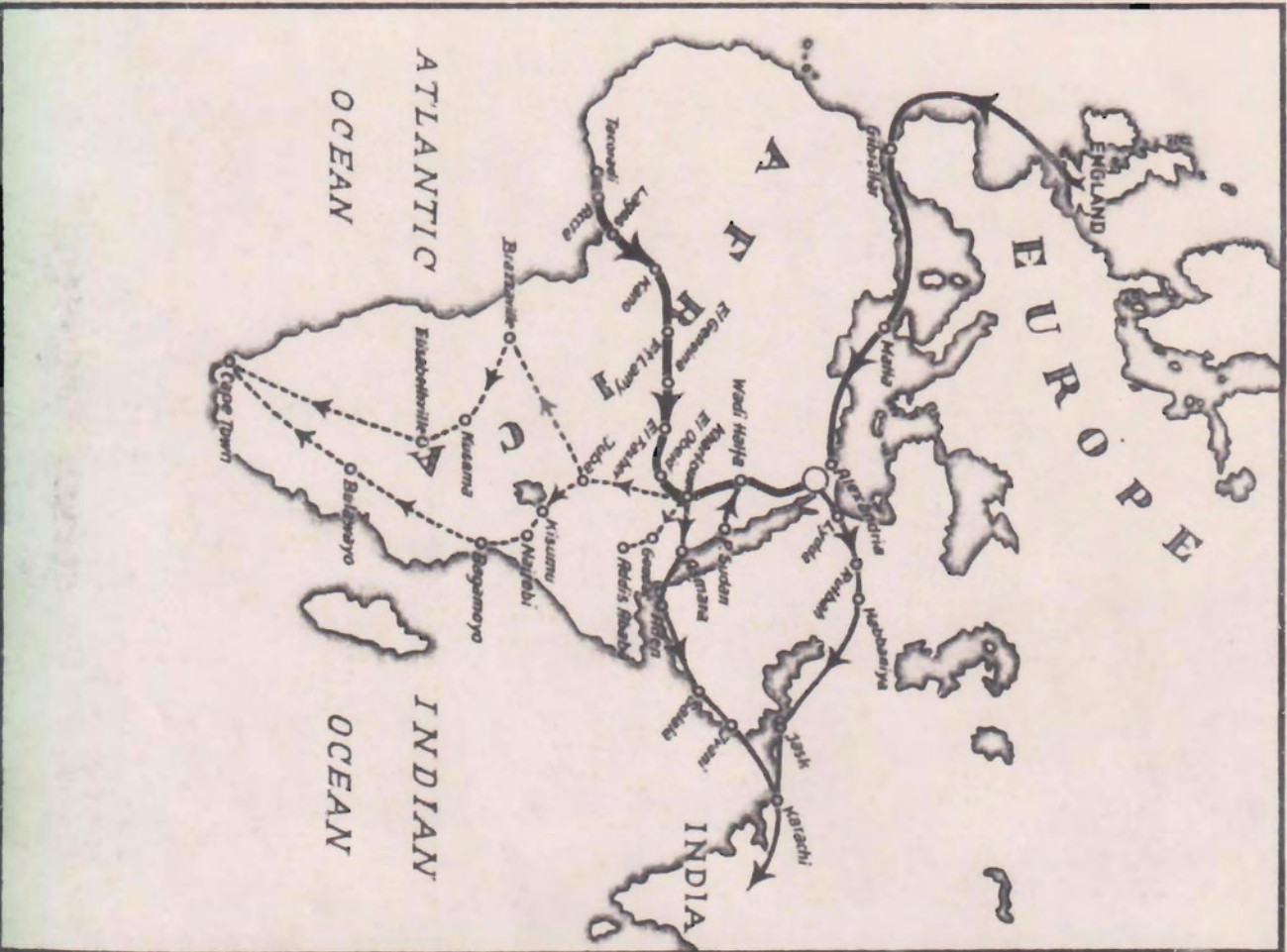
Within the framework of the monitoring of RAF higher headquarters in the eastern Mediterranean, AHQ Iraq-Iran was also listened to. In the second half of 1942, it was planned that certain groups of this headquarters, which were then only in a state of organization, would be monitored by the Luftwaffe SIS operating on the Russian Front; but because of the catastrophic changes for Germany that came about at this time in Russia, the plan was abandoned.

I. Ferry and Transport Service. (See Figure No. 23 and 24)1. General

The relatively long distance from Gibraltar to Malta, coupled with the partial elimination of the latter as an intermediate base because of the Luftwaffe attacks in 1942, forced the British to choose other routes for their transport and ferried aircraft (especially in the case of those with limited range, such as fighters). When the Luftwaffe SIS established itself in the Mediterranean, during the second half of 1941, messages were intercepted on both point-to-point and air-to-ground networks which were determined by D/F to be in central Africa; the messages themselves were easily identified as comprising transport traffic. By methodically monitoring this traffic, and by breaking the cryptographic systems employed, the organization, volume and nature of the transport and ferry activity were determined rather quickly. The decoding of 4-figure messages was especially helpful insofar as it permitted the reading of those messages in which the bases on the transport routes were mentioned, as well as particulars of the needs and requirements of the individual airfields.

Until control of French North Africa was secured by the Allies, the prevailing transport and ferry routes were:

Figure No. 24



Allied Ferry and
Transport Routes to
the Middle and Far
East
~ 1941-1942 ~

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- a) Takoradi-Lagos-Kaduna-Kano-Maiduguri-Fort Lamy-El Geneina-El Fasher-El Obeid-Wadi Seidna-Wadi Halfa-Luxor-Lower Egypt (Fayum Road, Wadi en Natrun, Kasfareet, Abu Sueir, I/G 224, Kilo 7). (See Figure No. 23).
 - b) Accra to Takoradi, then the same route as above to Lower Egypt, where I/G 224, Heliopolis, and Payne Field, were principally used. From here the aircraft were sent either to the Western Desert, or to the Far East via Lydda-H3-Rutbah-Habbaniyah-Karachi(India). There was a branch of this route extending from Wadi Seidna to Amara-Aden-Salala-Masira-Jiwani-Karachi. (See Figure No. 24).
 - c) Port Sudan-Wadi Halfa-Luxor-Lower Egypt.
 - d) England-Gibraltar-Malta-Egypt, and the Far East via Karachi.

To these principal routes were added a number of lesser importance, which were used for carrying critical civilian supplies and war materials. Among these were:

- a) Upper Egypt to the Belgian Congo
- b) Cairo to Cape Town
- c) Upper Egypt to Addis Ababa (See Figure No. 24)
- d) Routes along the west African coast (from 1943 on).

These ATC stations, at first entirely British, but, by the beginning of 1943, predominantly American, were linked together in a vast radio network, the hub of which was Cairo. A check for the SIS on the efficiency of its monitoring of these networks were the consecutive "convoy" numbers given to Allied transport and ferry flights. Even transfers of very small units were reported in these networks, such as the movement of several aircraft of 15 SAAF

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Squadron to the Kufra Oasis, or a flight over the Sahara to French West Africa. One of the greatest accomplishments of the Luftwaffe SIS was that it knew of the arrival of transport flights at individual airfields as early as did the RAF Middle East Command; this included a knowledge of when the aircraft would again take off, and for what destinations. Monthly SIS reports gave a comprehensive picture of the air transport situation, with exact details as to the number and type of aircraft being ferried. The monitoring of ferry traffic became a barometer of Allied offensive intentions, since a rise in the number of aircraft being ferried could almost certainly be taken as an indication of preparations for an offensive.

2. Individual Routes.

a) Takoradi-Khartoum-Lower Egypt. (See Figure No. 23)

Disassembled British aircraft arriving at Takoradi by boat were assembled there and flown to Egypt in flights of six to eight aircraft. These convoy flights were numbered consecutively, one of the last numbers, 400, being reached in November, 1943. The number of aircraft ferried monthly over this route varied according to the military situation in North Africa. In the beginning an average of 20-25 convoys a month (120-200 aircraft) were ferried; during the preparatory stage, or execution of an offensive operation, the number was increased to 30-40 convoys (as many as 360 aircraft). In the early days the principal aircraft types were Bristol Blenheims, Hurricanes and Bostons; later there were added Spitfires, Tomahawks, Kittyhawks, Baltimores, etc.

b) Accra-Khartoum-Lower Egypt. (See Figure No. 23)

This route was used primarily:

- aa) For the assembly, and ferrying in convoys (also to some extent consecutively numbered) of American aircraft.

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bb) As a continuation of the ferry route from Florida via Natal to Dakar and Accra. (American ferry flights over the southern and central Atlantic routes were monitored by W-13 in Munich/Oberhaching; those over the north Atlantic route to Prestwick were monitored by the 16th Company of SIS Regiment, West, in Brest). The principal types of aircraft ferried were B-17's, B-24's and B-25's. The means and extremes of the air convoys leaving Accra were so varied that an average monthly strength, having any significance can not be given.

c) Port Sudan-Khartoum-Lower Egypt. (See Figure No. 23)

Port Sudan, as Takoradi, was a terminal port for Allied shipping. Aircraft were assembled, and began to fly this route in about May, 1942, and continued until the end of 1943. The average monthly number of aircraft ferried was 40, during the earlier period, and 60-80 later on; at the time of Allied offensives it rose to 130 per month. Three to six aircraft usually comprised a convoy. Approximately one of the last convoys to be flown was number 228. The more prevalent types of aircraft ferried were Hurricanes, Spitfires (tropical), Bostons, Tomahawks, Kittyhawks and Baltimores.

d) England-Gibraltar-Malta-Egypt.

The monthly average was 40-80 aircraft, the high point being 140. Wellingtons, Blenheims, Hurricanes and Spitfires were the principal types of aircraft ferried.

3. Organization.

Up to the time of the Allied landing in Sicily, the Middle East Command in Cairo was the supreme authority in matters pertaining to the transport and ferry service. It supervised the operations of:

- a) 216 Ferry Group, and its satellites (1 Middle East Ferry Control on L/G224, and 2 ME. Ferry Control in Wadi Seidna).
- b) 206 Maintenance Group, with its maintenance units, air store parks, and repair and salvage units. The air store parks, and repair and salvage units each served particular fighter or bomber units. There were also maintenance wings in Asmara, Khartoum, Port Sudan, and other localities which serviced transport and ferried aircraft.

The invasion of North Africa, and the extension of warfare to the Italian mainland, resulted in a significant expansion of the transport and ferry service. New units and headquarters appeared; among them were the Mediterranean Allied Transport Service (MATS), and its 51st Troop Carrier Wing, the 12th and 15th Air Force Service Commands, and the Air Transport Division at Casablanca. The co-operation between these higher headquarters in the Mediterranean, as well as their link with the transport and ferry routes from America to Europe, and from Great Britain to the Mediterranean, was recognized from their radio traffic.

The headquarters of the British transport service (call-sign K3R) was located in London. At first the transport service in the Mediterranean was an independent one, but later was also subordinated to the London headquarters, which maintained direct radio communication with Cairo (W7Q, RIC), Malta (VB5), Naples (W03), Castelbenito (M3U), Algiers (U07), Gibraltar (MM) and Marseilles (9LF).

In 1943, the British created an RAF Transport Command in Cairo (J6U) along the lines of its American prototype, in which were incorporated all British transport and ferry units in the Mediterranean.

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The transport units of MAAF were the MATS (USAAF), and the Mediterranean Air Service Command (RAF). The Air Transport Division in Casablanca, with the help of its transport aircraft and ferry crews, expedited the delivery within the theatre of supplies and aircraft flown from America. The close co-operation between all these transport organizations was easily perceived by the SIS.

J. The Turkish Air Force.

The monitoring of the Turkish Air Force and police traffic by the Luftwaffe SIS always resulted in the same conclusion, namely, that Turkey was not capable of waging a modern war. Turkish pilots were trained by the German Luftwaffe, and later by the RAF in the Middle East. Their training at the hands of the latter was well known to the Luftwaffe SIS, even to the number and names of the trainees. In addition, Turkey was furnished aircraft by both Germany and the Allies. Nevertheless, despite all this assistance it was frequently noted that the aircraft were soon damaged through inept handling.

The organization of the Turkish Air Force was completed in 1944 with the remolding of air brigades into air divisions, and the creation of an air ministry. Its strength was roughly 400 aircraft of which no more than half were serviceable at one time. The ferrying of aircraft from Egypt via Lydda to Adana, in Turkey, was always monitored. The bulk of the Turkish Air Force consisted of many completely obsolete aircraft types, such as Falcons. Even the Hurricanes furnished by the British did not suffice to provide the basis for an operational air force.

Of greater importance was the monitoring of the Turkish police networks. While Kos and Leros were being reconquered by German troops, Turkish police

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stations broadcast agents' reports concerning German and Allied movements, thus providing a very welcome addition to the general picture of the situation.

As proof that the Turks were not completely unaware of the techniques of modern science, several radar stations were plotted in southern Turkey.

K. Allied Air Raid Warning and Radar Reporting Networks.

1. Allied Air Raid Warning Networks.

In Africa, during the summer of 1942, an intercept platoon of W-Leit, Southeast, discovered approximately fifteen networks comprising radio stations which used 2-letter call-signs. Beginning in 1943, the monitoring of these networks was continued from a mountain top in the vicinity of Athens. Following careful evaluation of these messages, it was found that they were emanating from Allied air raid warning networks.

The messages were enciphered in a transposition cipher system, the solution of which provided not only identification of call-signs and localities, but also other intelligence on the organization of the visual observer posts. This included information on their supply problems, permission to attend football games, requests for furloughs, announcement of inspection, etc.

In reconstructing this organization, the fact that the individual visual observer posts and radio networks were designated in alphabetical order, was of great assistance. After the grid system was solved, types of Allied aircraft, which were also reported by these stations, could be ascertained by comparing the time intervals elapsing between reports, and the duration and range of flight.

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This Allied visual reporting system also served as a source of early warning for the Germans. Since for a long time the only targets of the Allied four-engine aircraft were in Greece or Italy, both of these Axis-held areas could be alerted by determining when the bombers crossed the North African coast, and a knowledge of the average speed of the aircraft types involved. By alerting the German fighter arm in the case of a raid on Forli in Italy, the SIS was able to claim partial credit for the shooting down of thirteen Liberators.

Although German units were forbidden, by order of Luftwaffe headquarters, to use the "Aukatafel" (Luftwaffe low-grade operational code) for messages or reports based on signal intelligence, nevertheless certain German fighter control stations on two occasions broadcast early warnings received from the SIS in this insecure code. The second of these two security violations proved fatal, as the Allied code groups used to designate individual aircraft types were changed, and these could no longer be identified.

The SIS was able to derive the following additional intelligence from these air raid warning networks:

- a) Organization of the Allied visual observer service. This was found to extend from the Turkish border to Tripoli, and was divided into twelve sectors, each comprising ten observer posts.
- b) Knowledge of airfields being used.
- c) Bases of combat aviation units.
- d) Points at which the coast was crossed on outward and return flights.
- e) Nature and intensity of air activity.

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2. Allied Radar Reporting Networks.

a) General.

After the Luftwaffe SIS had resolved the question of the Allied air raid reporting networks, it began to tackle the problem of a chain of similar networks, which differed only in the fact that 3-letter rather than 2-letter call-signs were employed. A certain relationship had been established between these networks and the fighter wings. Characteristic of messages intercepted on these networks was that they referred to positions as far as 300 Km. out to sea, and in designating the aircraft being observed, the symbol "H" (hostile) was frequently used, followed by a 3-figure number. The task of observing the aircraft was passed on to other stations indicating that a maximum range had been reached. It was evident from the ranges that the use of radar must be involved. Since, however, German development in this field had not kept pace with that of the Allies, the reports of these increased ranges were at first regarded skeptically. With diligent effort, however, the SIS in due time was able to provide the German Command with a detailed picture of what proved to be the Allied radar reporting service.

b) Organization.

The control stations of these networks were five wing headquarters, among which were 233 Fighter Wing in Cyrene, and 250 Wing in Ismailia. By a graphic analysis of messages transmitted by these stations, the boundaries of their air defense zones were determined, as well as the smaller sectors into which these were subdivided. The overall organization became as familiar to the SIS as that of the air raid warning service. When the radar reporting networks were moved to Italy, the air defense zones and sectors of MACAF and MATAF were just as speedily determined.

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c) Range of Allied Radar.

The Luftwaffe Command was considerably troubled by this evident increase in the range of Allied radar, and advised its reconnaissance aircraft to attempt to avoid detection by flying extremely low over the water. However, by evaluating the reports of radar plots intercepted on the Allied communication networks, the SIS was soon able to disprove this theory, especially in the case of flights off the North African coast where the Allied radar stations were located on high cliffs, and had a virtually unimpeded sweep. It was further established that Allied radar was divided into heavy, medium and light types, the respective ranges of which were ascertained.

d) Location of Radar Sites.

By charting all plots reported by one radar station, and by proceeding on the theory that such a station must lie in the center of a circle drawn through the plots of extreme range, the SIS was able to determine the approximate location of all Allied radar stations. These locations were confirmed by bearings taken by the German Radar Intercept Service.

e) Knowledge of Allied Operations.

By studying the speed and rate of climb of Allied aircraft as revealed in these messages, which were intercepted almost continuously, the nature of an Allied mission (fighter or bomber) could be determined. Thus, for example, even though the Luftwaffe Command could not afford to dispatch reconnaissance aircraft to check on Allied defensive air activity, the SIS, from radar reporting traffic, could supply the information that the Cyrenaican coast was being patrolled twice daily, on each occasion the same course being followed.

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Movements of transport aircraft also were determined from this traffic, as well as from the visual observer networks.

f) Flight Path Tracking.

One of the most important results obtained from the monitoring of radar reporting networks was the ability to track Allied aircraft while still over their own territory, and beyond the range of German radar. It was also possible to track the course of German reconnaissance aircraft flying into Allied territory, and to compare these with the reports rendered by the German crews upon their return. The monitoring of these radar reporting networks also formed the basis for warning German reconnaissance aircraft of the approach of Allied fighters. The development of this fighter warning service is discussed in detail in a special study to be found in Vol. VIII.

L. Allied Cryptographic Procedure in the South.

1. General.

Cryptanalysis in the South was begun in 1941 in Taormina, and in the beginning enjoyed considerable success. However, as Allied systems became more complex and difficult, it was found not suitable to attempt the breaking of codes and ciphers in the field. Finally, in November 1943, cryptanalysis in the South was discontinued entirely, and was taken over by the Chi-Stelle and an SIS company in Husum.

2. The British 4-Figure Code.

This procedure consisted of a code reciphered with an additive. The code book comprised two parts, the first of which was a general vocabulary,

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the second containing words likely to be repeated frequently, such as names of units, places, prepositions, etc. The words in both parts of the code book were designated by 4-figure code groups, many of these 4-figure groups appearing in both the first and second parts of the book. In order to avoid confusion, a special group was used to indicate a reference to part two (for example, 2222 = turn to part two). Similarly, an indicator was used to inform the decoder to return to part one (for example, llll = end of part two). Indicators were also used to mark the beginning and end of "spellers", which were used primarily to spell those proper names not to be found in part two. In the beginning of the war, the group 2222 was always to be found as the first group of the encoded message, followed by the name of the originator, taken from part two (or spelled), and then the indicator llll appeared, to indicate a return to part one. This stereotyped procedure afforded the Luftwaffe SIS a relatively simple point of entry into these messages. Later all frequently used words or phrases were given as many as eight variants, and the name of the originator inserted at random within the text of the message. This meant that now a message could not be broken on a basis of a knowledge of its structural form alone. In the early days of the war the existing edition of the code book had been in effect for a relatively long period, with the result that all groups had been identified.

The enciphering component was the so-called "General Worm", and additive book, consisting of ten thousand 4-figure groups. The encipherment was achieved by adding a string of these numbers to the 4-figure code groups. In deciphering, the process was reversed, the additive groups being subtracted from the code groups.

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Indicator groups gave a page and row reference by which the additive series used could be found in the General Worm. In 1941, this procedure was refined to the extent of using two such indicator groups. The first of these groups referred to a special code table consisting of one hundred 4-figure groups. This number, when decoded and added to the second indicator then revealed the page and row number on which the additive began. The "General Worm" also had not been changed for a long time at the beginning of the war. Later, however, it was changed at irregular, and increasingly shorter intervals, until finally, in November, 1942, it was valid for five-day periods only.

3. The Syko Procedure.

Syko cards, by means of which encoded reconnaissance messages were deciphered, were 36 rows in length, and 32 columns in width. These cards were changed daily. In each of the squares was inscribed either a letter or a number. In Great Britain the same card was used by all tactical units. Thus, owing to the depth of messages, solution was made relatively easy. In the Mediterranean however, three cards existed, one being used for general purposes, the others for ferry messages. To achieve any degree of cryptanalytic success, a depth of several messages, of at least 32 characters each, was needed. Since such an instance was rare, the solution of these messages could not often be effected on the day of their interception. An additional difficulty was that in the Mediterranean, the numbers and figures on these cards were not reciprocal; for example, if number "1" were equal to letter "a", letter "a" did not necessarily equal number "1". Owing to this lack of reciprocity, and to the continually diminishing number of messages intercepted, attempts to decode these messages in the Mediterranean were finally abandoned, and all intercepted material and captured Syko cards were sent to Husum.

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4. Transport and Ferry Codes.

The cryptographic system most frequently used by aircraft flying the North African ferry and transport routes was the Aircraft Movement Code. It comprised 5-letter pronounceable groups, and was used to encode the ETA and ETD messages of flights of transport and ferry aircraft.

5. Weather Codes and Ciphers.

Transmissions from the large weather stations in Africa were regularly intercepted. The basis of these messages was the Copenhagen international meteorological cipher, which was deciphered by means of a 5-figure additive book in the same manner as the 4-figure procedure described above. In addition several other low-grade codes and ciphers were broken. As a result of this cryptanalytic work, German headquarters were continually informed on the weather situation in Africa.

6. Radar Reporting Cipher.

Messages intercepted on visual observer and radar reporting networks, were found to be enciphered by means of a simple transposition cipher. The messages were inscribed either horizontally or vertically in a rectangle of an arbitrary number of squares. To be deciphered, the messages had to be inscribed in a similar rectangle in converse fashion (e.g., if enciphered horizontally they were inscribed vertically for deciphering.). The principal cryptanalytic problem was determination of the number of rows and columns in the rectangle used.

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M. The Evaluation Company of the SIS Regiment, South.

At the beginning of the war, when only HF W/T and R/T existed, each SIS company comprised an intercept platoon, evaluation platoon and communication platoon. The company's task was the interception and analysis of enemy radio traffic within its assigned area. It had, therefore, within the scope of its area, a complete survey of the operations and order of battle of enemy air forces. On the one hand, it forwarded the intelligence gathered, as flash reports, to the air tactical headquarters to which it was assigned; on the other, daily technical signal reports, and monthly reports, to its superior SIS units (W-Leitstellen and the Chi-Stelle). Because of its complete SIS functions, and the fact that it was dealing with HF transmissions only, the company enjoyed a far-reaching independence, which was expressed in the selection of its own monitoring missions, evaluation procedures, and preparation of reports. The evaluation functions of the higher SIS units (the W-Leitstellen and Referate of the Chi-Stelle) was confined to the analysis of the subordinate company reports, and preparation of final survey of the enemy air situation, which, in turn, served the highest air headquarters, the Luftflotten and General Staff.

With the introduction of VHF and radar, the operating procedures and structure of the SIS were profoundly changed. Interception of these transmissions exceeded the capability of the SIS company as organized, since further specialization was required. So radar and VHF intercept companies were created. Thereupon a central bureau for the analysis of all SIS material received from different sources became necessary, as well as the assignment of monitoring missions by a centralized agency. These functions were assumed by the evaluation companies of the SIS battalions, into which type companies, during the course of 1942, the W-Leitstellen

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were changed.

The two evaluation companies, one in Taormina (W-Leit 2), the other in Athens (W-Leit, Southeast), now prepared and distributed a daily situation report on enemy air activity within their respective theatres (western and eastern Mediterranean). These reports were furnished to the tactical headquarters, Fliegerkorps X and Luftflotte 2, and to Referat C of the Chi-Stelle. The two evaluation companies also prepared a monthly report of extensive distribution, which function was prohibited to the intercept companies that now supplied the Leitstellen only with technical signal reports.

Monitoring missions of the intercept companies were directed and supervised according to the following procedure. The Chi-Stelle allotted receivers and personnel to the Leitstellen sufficient to monitor an estimated number of frequencies, and exercised close supervision over the monitoring activities, so as to maintain a balance in frequency coverage throughout the entire theatre. The Leitstellen, of course, assigned the coverage of specific frequencies to the subordinate intercept units. Consequently, the independence of the original SIS companies was thereby drastically curtailed. Tasks as between the companies now became definitely specialized, there being HF, VHF, radar intercept, and D/F companies. In addition to their primary function of interception, each company performed immediate tactical evaluation for the purpose of furnishing flash reports.

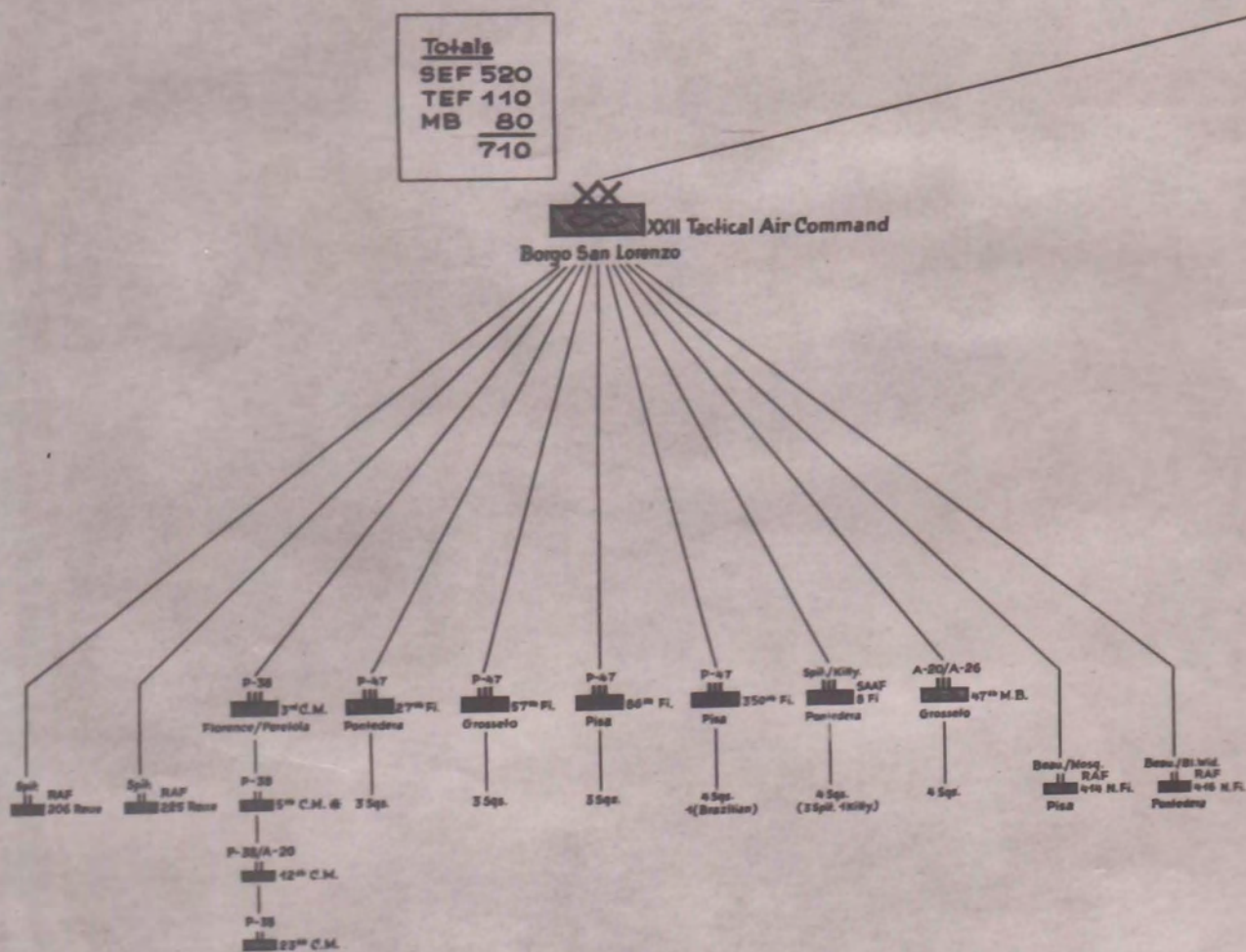
With the creation of SIS Regiment 352, South, a regimental evaluation company was formed out of the best qualified personnel of the two W-Leitstellen evaluation companies. Only a platoon for tactical evaluation purposes remained with each battalion.

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Disposition of the Allied Air Forces in the Mediterranean and Middle East

~ April 1945 ~

Figure No.1



* *Combat Mapping*

** *Med. Allied Photo-Recce-Wing*

*** *Sea Rescue Unit*

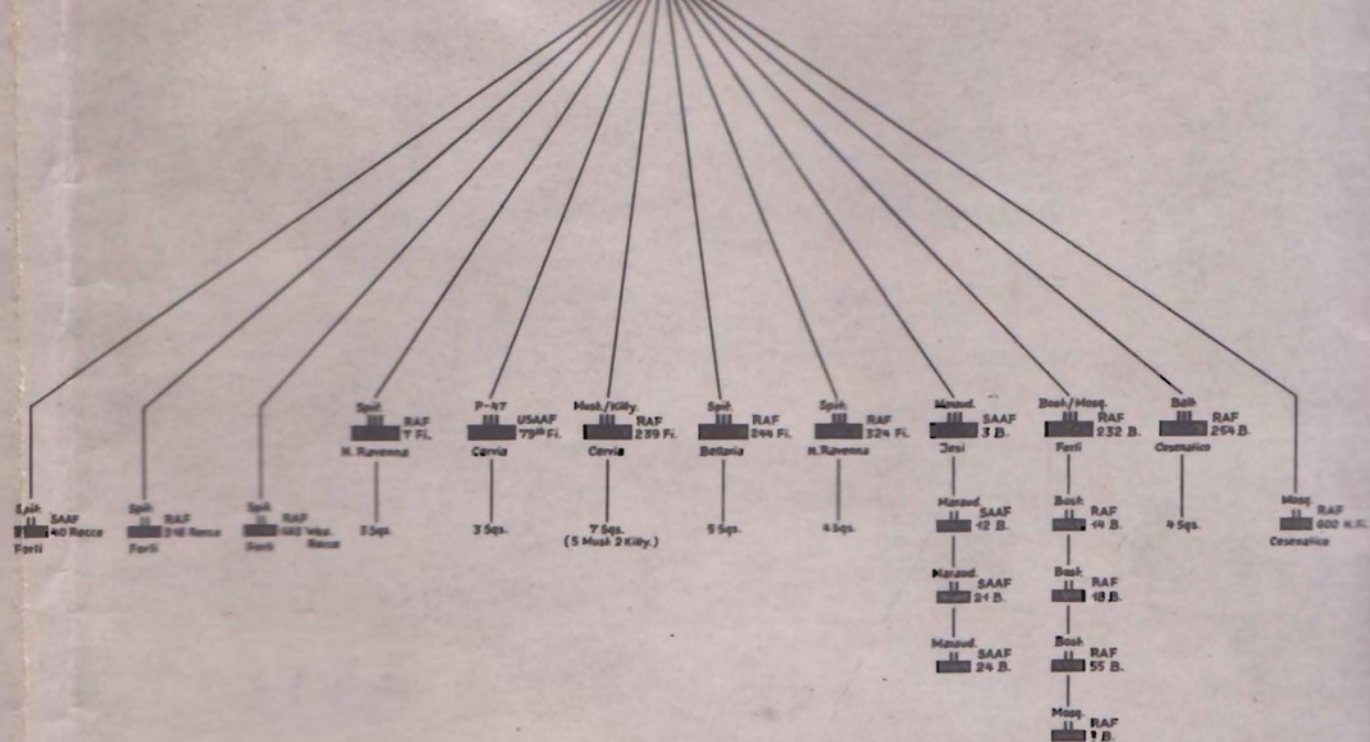
ces
East.

Totals
SEF 1040
TEF 135
MB 615
1790

MATAF
FLORENCE

Totals
SEF 515
TEF 25
MB 235
775

RAF
Desert Air Force
Forli



Totals
 SEF 5
 MB 300
 305

Fano 57th M.B.

Foggia 5th H.B.

B-26 RAF 232 B.
 Ormatnico

M-47 RAF 600 H.F.
 Cesenatico

P-51 Fano
 2 Wd. Recce

B-25 Fano 310th M.B. 4 Sqs.
 B-25 Falconara 321st M.B. 4 Sqs.
 B-25 Rimini 340th M.B. 4 Sqs.

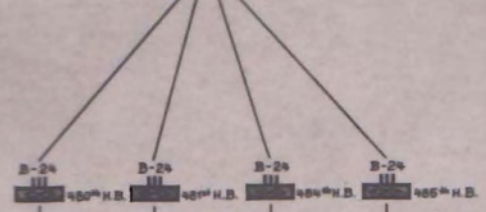
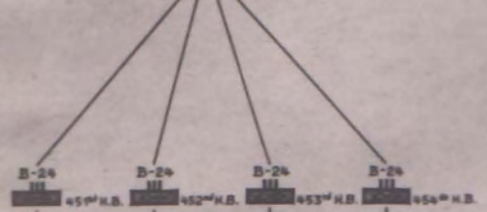
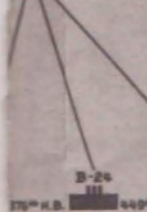
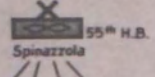
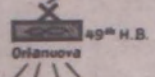
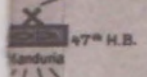
B-17 2nd H.B. 4 Sqs.
 B-17 97th H.B. 4 Sqs.
 B-17 99th H.B. 4 Sqs.
 B-17 301st H.B. 4 Sqs.
 B-17 4 Sqs.

RAF 18 B.
 RAF 15 B.
 RAF 1 B.

<u>Totals</u>	
SEF	1830
TEF	685
MB	750
HB	1700
SRU	30
Trans.	605
	<u>5600</u>



<u>Totals</u>	
SEF	400
TEF	400
HB(USAAF)	1460
HB(RAF)	180
	<u>2440</u>



4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

4 Sqs.

<u>Totals</u>	
SEF	1830
TEF	685
MB	750
HB	1700
SRU	30
Trans.	605
	<u>5600</u>



MAAF

CASERTA

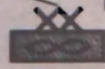
<u>Totals</u>	
SEF	400
TEF	400
HB(USAAF)	1460
HB(RAF)	180
	<u>2440</u>



MASAF

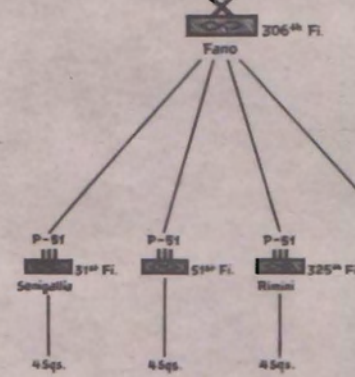
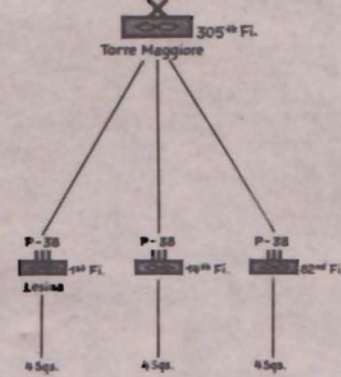
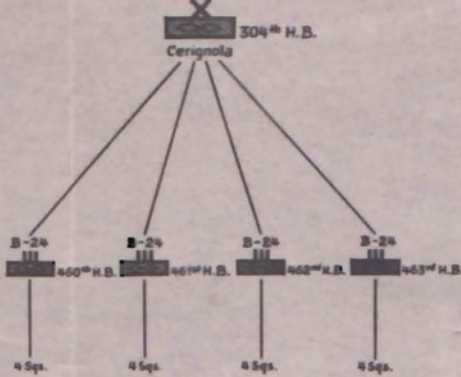
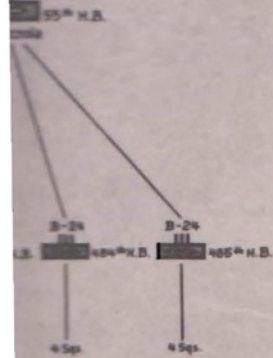
BARI

<u>Totals</u>	
SEF	400
TEF	320
	<u>720</u>



XV Fi. Command

Fano

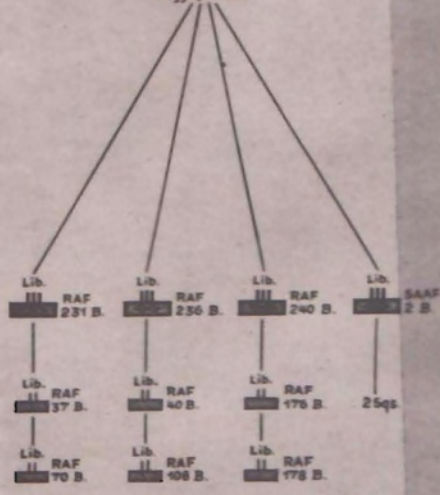


operational control

Totals
SEF 90
TEF 100
MB 60
SRU 30
280

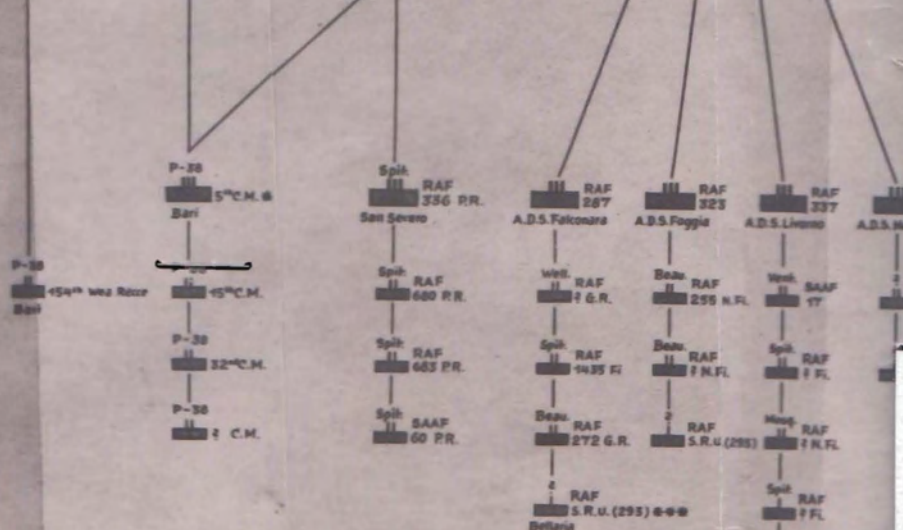
Totals
HB 180

RAF
205 B.
Foggia/Casone



Totals
SEF 60
TEF 80

50 MAPRW ***
San Severo



RAF
MACAF
Caserta



Totals	
SEF	90
TEF	100
MB	60
SRU	30
<hr/>	
	280

Totals	
SEF	130
TEF	50
MB	60
HB	60
<hr/>	
	300

Totals	
SEF	80
MB	15
<hr/>	
	95

RAF MACAF
Caserla

RAF BAF
Bari

RAF AHQ Greece
Athens

RAF 202
Marseilles

HQ RAF Malta
La Valetta

RAF 323
A.D.S. Foggia

RAF 259 N.F.
Beauv.

RAF 7 N.F.
Beauv.

S.R.U. (295)
Beauv.

S.R.U. (295)
Beauv.

RAF 337
A.D.S. Livorno

SAAF 77
Verc.

RAF 7 FL
Spit.

RAF 7 N.F.
Maug.

RAF 7 FL
Spit.

RAF 340
A.D.S. Marseilles/Toulon

RAF 7 N.F.
Toulon/Hyeres

S.R.U. (295)
Toulon/Hyeres

RAF 4 S.
Toulon/Hyeres

S.R.U. (4)
Toulon

RAF 4-17 N.F.
Beauv.

RAF 7 FL
Maligne

RAF 7 FL
Th. Fc. Navarre "Fl.

RAF 7 FL
Salon de Provence

RAF 7 FL
Aira

HQ RAF Malta
La Valetta

S.R.U. (293)
Polemio

RAF 261 FL
Zona/Nadin

RAF 352 FL
Spit.

RAF 7 FL
Spit.

RAF 291 FL
Herr.

Jtal.
Aira

RAF 263 FL
Compomarina

RAF 213 FL
Musk.

RAF 249 FL
Musk.

SAAF 16 FL
Beauv.

SAAF 49 FL
Beauv.

RAF 254 M.B.
Compomarina

SAAF 25 M.B.
Mazod.

RAF 39 M.B.
Mazod.

Jtal.
Balk.

Jtal.
Beauv.

RAF 334 T.
Brindisi

RAF 448 T.
Hil.

RAF 604 T.
Lib.

RAF 4485
Hil.

RAF 32 FL
Spit.

RAF 7 FL
Spit.

S.R.U. (294)
RAF

S.R.U. (294)
RAF

13 M.B.
Balk.

RAF 32 FL
West/Vn

RAF 7 FL
Bengh.

S.R.U. (294)
RAF

S.R.U. (294)
RAF

13 M.B.
Balk.

Totals
 SEF 240
 TEF 50
 MB 75
 HB 60
 Trans. 380
 805

CAIRO HQ RAF Middle East

Totals
 SEF 80
 MB 15
 95

RAF AHQ Greece

Alexandria RAF AHQ Eastern Mediterranean

Totals
 SEF 30

Totals
 380 Trans.

Cairo HQ RAF ATC

Totals
 225 Trans.

USAAF HQ MATS

Benghazi RAF 212

Halifa RAF 209

Cairo RAF 216 T.

Piombino 51st T.C.

Dak. RAF Naples 2 T.

Dak. RAF Cairo/West 262 T.

Dak. RAF Blida 284 T.

RAF Catania 216 T.

Dak. SAAF Bari 5 T.

C-47 60th T.C. Naples

C-47 62nd T.C. Tarquinia

C-47 64th T.C. Rosignano

RAF 459 M.B. Benghazi
 RAF S.R.U. (294)

SAAF 26 T. Castel Benito

5 Sqs. 4 Dak. 1 Lod.

Dak. RAF Blida 267 T. and 2-3 Sqs.

5 Sqs.

3 Sqs.

3 Sqs.

3 Sqs.

— Training units —